

THE ROLE OF LOW CARBON, SPATIAL
QUALITY AND DRAWINGS IN LANDSCAPE-
BASED REGIONAL STRATEGIES

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A thesis submitted in partial fulfilment of the requirements of
Birmingham City University for the degree of
Doctor of Philosophy

May 2017

Faculty of Arts, Design and Media, Birmingham City University

Acknowledgements

When this moment comes, to thank the people who believed in you, supported you and have spent time with you, then you realise you have been through a lifetime experience. This journey has been incredible, thanks to you all.

I wish to start with the person who gave me the opportunity to pursue this journey and be where I am today, the person who is much more than a mentor and a supervisor. Professor Kathryn Moore has given me incredible support, filled me with belief, passed on her passion, intrigued me to explore the unknown, and infused me with her endless eagerness for knowledge. Thank you.

Professor Peter Larkham has always been the stable voice during these years. His enthusiasm, knowledge and experience have answered my countless questions, replied to my dilemmas and encouraged me to reach the next milestone.

Both of you have helped me enjoy this journey. I am truly grateful and I believe I am lucky to have learned from the best.

Special thanks to my friend and colleague Tony Davis who has supported me in numerous ways throughout this thesis and to my many friends and loved ones whose humour and encouragement have eased the difficulties.

Birmingham City University and Climate-KIC have played a very important role in this thesis. My university has given me the moral and practical equipment to fulfil this exercise, while Climate-KIC has funded the thesis and has also opened a whole new world of knowledge and networking. Also the numerous institutions and experts that I have met in Catalonia, the Netherlands and the UK have been fundamental for the development of this thesis.

To the people who have always been beside me since I was born, through my many endeavours and adventures. My family Eleni, Katerina and Sotiris have always been with me, encourage me, challenge me, and advise me. My partner Panagiotis who with his patience, humour and positive focus in life has helped me through this. Thank you.

Abstract

Significance: Through the medium of a pilot study on the Garden Cities Wolfson Economics Prize (UK) and the three main case studies (Catalonia/Netherlands/UK), the thesis investigates the key ideas of each project, evaluating their effectiveness related to sustainability and quality concepts. The exploration of European and UK large-scale projects is interpreted on a journey to innovative and successful landscape schemes, giving the opportunity to this thesis to evaluate their effectiveness and delivery with regards to low carbon and spatial quality. **Rigour:** The examination of the state of the art in regional landscape design concepts was based on the identification of the key ideas by current theory, the communication methods, and their impact to large-scale project development. Establishing collaborations with pioneer projects in Catalonia, the Netherlands and the UK, the study has developed a specific methodology that allows the identification of key issues, such as low carbon and quality of space, as well as the evaluation of their dissemination and interpretation through the landscape project process. A pilot study (Garden cities – Wolfson economics prize) followed by three case studies (Landscape Observatory, the Netherlands and HS2/HS2LV) are the main steps to evaluate the effectiveness of the processes followed and the best practices towards a sustainable and quality landscape design.

Originality: The contribution to knowledge of this thesis lies upon the identification and creation of sustainable strategic schemes that work effectively at the scale of landscape projects, affecting positively the way regions are conceptualized and addressed. The need for a project framework supported by policies and legislation that will secure the early integration of ideas such as low carbon, spatial quality and drawings, is identified as a significant step towards successful project implementation

and impacts on the extent to which key issues will be delivered in strategic schemes. The recognition of drawings and visuals as communication tools, through the landscape project process, improves the understanding of the land and acts significantly in the interpretation of the landscape vision as well as the integration of key issues in strategic schemes. Evidence collected during the study indicates that innovative projects can form theory and therefore that the key issues of low carbon and spatial quality can be interpreted differently across Europe, playing distinct roles, and gaining significant importance to the landscape project process. **Impact:** The proposal for a common European and UK agenda related to strategic landscape schemes will share lessons of good practice suggesting ways to strengthen the areas of sustainable landscape development and it will improve understanding, communication, and implementation of low carbon and spatial quality, by sharing knowledge and adopting best practices, creating a sustainable environment.

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Glossary

Abstract – general drawings = drawings that are not detailed and which have been carefully drawn to selectively represent specific landscape characteristics.

Analytical drawings = the researcher's drawing analysis unpacking information of finalised masterplans. The analytical drawings consist of several graphs such as water strategy, green infrastructure, transport strategy, type of neighbourhoods and more. The method was used in the pilot study.

Comarca = similar to county. Catalan origin.

Creative minds (HS2) = term used by one of the interviewees, pointing at experts willing to overcome the current thinking in strategic projects, and pushing for innovative methods during the project process.

Depoldering = water safety method developed in the Netherlands. The dyke on the river side is moved land-wards, so the river can flow into the area during periods of high water.

Design/Planning = terms used to describe the landscape development either with emphasis on land use or on the overall vision of the area. Terms are often used interchangeably as this thesis is not dealing with their definitions.

Drawings = this thesis is using the term drawings referring to more than one styles. Therefore drawings can include, visual representations, pictorial forms, maps, axonometrics, sketches and graphs. The thesis is not dealing with the strict definition of the terms, but it is trying to evaluate how visual media impact on decision making and the communication of ideas at a regional landscape project.

Dyke Relocation = water safety method developed in the Netherlands. Relocating a dyke land-wards increases the width of the flood plains and the land that was protected by the dyke is exposed to high water expanding the river's winter bed.

Fragile concepts = concepts that need to be integrated and secured by the project framework, a policy or legislation in order to have a strong presence in the landscape schemes. This research is addressing low carbon, spatial quality and drawings as fragile concepts.

Gemalen = structures known as pumping stations located near to the dykes to deal with water levels. Netherlands origin.

Koppelstuk = a binding structure that links the mound with the area outside the dyke. Developed in the Netherland's landscape project of Noordwaard (Room for the River).

Low carbon = currently a common but ill-defined term. In relation to the landscape, the term is used to indicate an approach to a new lifestyle and dealing with environmental stability in various aspects from energy to design and from concept to materiality. As far as this research is concerned, it is also a flexible concept that can be interpreted in various ways. The fragility and flexibility of the term is a research finding suggesting that low carbon can be interpreted in various ways, but if it is not secured by the project process it might not be given the attention needed.

Narrative = the story, vision, concept, storyline or goal of a landscape project. The practice or art of telling stories that can be interpreted to a landscape concept during the development of a landscape scheme. The English Oxford dictionary is giving the definition as a 'representation of a particular situation or process in such a way as to

reflect or conform to an overarching set of aims or values'. The term here is used with an emphasis on the visual material, often to a different way of its use in linguistics.

Pioneer scheme = strategic landscape projects that have embedded innovative methods and are examined by this thesis. Best practice examples that have not been done in the same way, concept or scale and are expected to set a benchmark for future infrastructure development.

Polder = low-lying tract of land enclosed by dykes. Netherlands origin.

Programme and Project = the national or regional schemes that consist of more than one individual project are called programmes. Strategic schemes considered by this thesis are the Room for the River, the New Dutch Waterline and the HS2.

Project Framework = a process, method or tool that embeds all the necessary actions for the establishment of a successful landscape scheme. The framework secures their early integration within the scheme. The term does not link to previous definitions, but it is used to describe the method suggested by this thesis.

Project Management = the managerial role of a large-scale strategy that usually relates to the administration of a scheme.

Proposal Analysis = the analysis of the essays and documents produced during the Wolfson Economics Prize competition. This method was used in the pilot study and aimed to align findings from the drawing analysis with the text and proposals submitted.

Region = term used in this thesis as a diffuse concept, without being limited by topographical /geographical characteristics, since its interpretation varies across Europe.

Rijkswaterstaat = Dutch Ministry of Infrastructure and the Environment. Netherlands origin.

Spatial/Landscape Quality = as defined by this research, a term relating to sense of place, community engagement and identity of the landscape. It is also a flexible concept that can be interpreted in various ways.

Sustainability = covers a broader concept than low carbon, including future proofing and economic elements. This research uses it interchangeably with low carbon, since the concepts often overlap in the landscape field.

Section I

1. Introduction

1.1 Introduction

This thesis represents a journey through pioneer landscape projects across Europe exploring innovative ways that lead to best practices and successful sustainable landscape schemes. Investigating the extent to which low carbon and spatial quality can be delivered in regional projects, the way in which visual representations and pictorial forms such as drawings, diagrams and images contribute to the project process and how this process needs to be embedded in governance and political structure, the study presents an opportunity to evaluate the effectiveness of each approach.

Building strong connections with important projects¹ in Catalonia (Landscape Observatory), the Netherlands (Room for the River/New Dutch Waterline) and the HS2/HS2LV² project in the UK, the thesis reveals the way of thinking and the development process in regional landscape schemes, extracting the expertise of three different countries; Spain, the Netherlands and the UK. Exploring where theory meets practice, based on the concepts of low carbon, spatial quality and sense of place, the study discovers how these are spatially addressed, their impact on landscape scale strategies and how they can be embedded in design.

The momentum built in Europe in recent years in relation to the concepts of climate adaptation, land use, behavioural change and a resilient way of living, recognizing

¹ Selection of Catalan, Netherlands and UK projects are based on their innovative concept and project process and their global recognition in the landscape field. Detailed criteria presented in Chapter 3.

² The High Speed 2 railway project and an associated landscape vision (HS2LV).

climate change as a concern that urgently needs to be addressed (United Nations, 2015), enhances the relevance of this research in seeking effective ways of dealing with climate issues in spatial strategies. The evaluation of key ideas at a pan-European level aims to show the reasons why such projects are considered successful by their designers and highlight the importance of communicating ideas from a strategic to a detailed scale. Investigation of the structures behind successful implementation of landscape proposals will identify the role of pictorial forms during the process, as well as the importance of its engagement in strategic schemes. The researcher's interest in both climate change related issues impacting on landscape and the way the design process can address the global changes we face has shaped the current research. The funding of the thesis by Climate-KIC, which is interested in low carbon initiatives across Europe, has also played an important part in the conduct of the research.

The opportunity to explore European examples that relate to climate, environmental, cultural, social and economic issues, highlighting the future of spatial landscape strategies, has been made possible by Climate-KIC (Europe's largest public-private innovation partnership focused on mitigating, socializing and adapting to climate change). As one of the seven Knowledge and Innovation Communities (KICs) of the European Institute of Innovation and Technology (EIT), Climate-KIC aims to improve practice across Europe by creating a low carbon culture that engages companies, communities and citizens to reduce their impact and connect on the challenge of climate change (Rhombus Writers, 2013).

The mandatory requirements for dynamic cross-border partnerships defined by Climate-KIC, and the additional financial support provided for such initiatives, allow this research to integrate the exploration of different projects across Europe, giving the opportunity to investigate a broad range of ideas, structural frameworks, cultural

differences and effective implementation techniques, revealing successful concepts, ways of governance, management frameworks and communication elements of regional landscape schemes. Climate-KIC's strong links with European and worldwide businesses and academia provide a wide pool of sources, connect the researcher with individuals and institutions working in the field of innovation and climate change and allow this study to investigate new ways of professional practice. The way in which we view and act upon strategic landscape developments is of great value to the provider of the fund (Climate-KIC), drawing lessons that can be used across Europe and perhaps more widely.

With the help of a pilot study on the Garden Cities Wolfson Economics Prize (UK) and the three main case studies (Catalonia/Netherlands/UK), the thesis investigates the key ideas of each project, evaluating their effectiveness related to sustainability and quality concepts. The contrast in their approaches forms a unique opportunity to extract knowledge from a wide range of successful strategies. The pilot study demonstrates the emphasis on sustainability through economic development with limited communication through the design. The extended knowledge that the Landscape Observatory provides for the Catalan landscape, the technical and socio-cultural elements that are extracted from the quality designs of the Netherlands and the speed in ideas and possibilities for the region (HS2LV) also reveal a variety of effective key elements. The cross-disciplinary approaches and the careful exploration of ideas and successful stories developed in different countries are areas of investigation.

The communication of these ideas is also considered significant as it is acknowledged that visual representations and design are important elements of landscape projects (Chapter 2). Even though drawings have various roles, this thesis will emphasize their communication role. It investigates ways in which pictorial forms have been used to

represent landscape on a regional scale, and the role they have played in the delivery of the scheme.

1.2 Aim & objectives

Within the broader research focus on regional landscape design and the lessons drawn by the relation of major schemes to the concepts of climate change, sustainability, low carbon and sense of place, the implementation of design ideas needs to be explored. This study therefore aims to investigate the extent to which low carbon and spatial quality can be delivered in regional infrastructure projects and the way in which visual representations and pictorial forms, such as drawings, diagrams and images, can change the way in which we conceptualize regions and their landscape potential.

In the context of regional spatial design the research objectives are to:

- Investigate how the spatial dimension of low carbon is demonstrated or embedded;
- Evaluate the role and nature of spatial quality and low carbon priorities;
- Examine the relationship between sense of place and landscape quality in large-scale infrastructure projects;
- Identify the extent to which low carbon principles and spatial planning are associated;
- Evaluate the role that drawings have in decision making, and
- Provide conclusions for best practice and policy.

1.3 Key ideas discussed by the research

This section introduces the key ideas developed in Chapter 2 that form an important background for the conduct of this research. As the research unfolds it reveals a rich and variable set of concepts and ideas, rarely clearly defined and often overlapping. These are explored through the lens of spatial regional planning, setting the scene for landscape strategies. The main ideas covered are introduced below.

Spatial planning creates various responses in relation to strategic schemes. The issue of scale in planning has been investigated by experts and authors resulting in many different views on the scale at which planning can operate. As the eminent planner and author Louis Albrechts suggests, spatial planning is often thought to apply on a relatively small scale without considering its potential for a strategic landscape scheme (Albrechts, 2006). This research examines examples at a wide range of scales including regional and large-scale design and planning.

The terms *strategic* and *region* relate to various interpretations that can express scale, but also give an account of physical or social characteristics. As Healey (2004) explains, ‘strategic is sometimes used to mean a higher level of administration, or a more general or abstract level of policy’, that does not always relate to a strategic level of landscape projects as explored here.

Region is often given a topographical or political interpretation, however this study aligns with Newman (2000) who suggests that the region is defined in many different ways based on regional phenomena such as climate, topography, geography, culture, and even economic patterns. The evaluation of cross-border projects shows that what is considered as regional scale for one country could be national scale for another, leaving the term open to discussion and interpretation. For example what is considered

as a region in the UK, might be a national scale in the Netherlands or Malta as the same area extends to the whole country.

Policies, legal entities and legislation often relate to spatial planning and regional design. Patsy Healey, a key UK planning academic, states that the term planning ‘implies a mode of governance (a form of politics) driven by the articulation of policies through some kind of deliberative process and the judgment of collective action in relation to these policies’ (Healey, 2004:46). This thesis investigates how the individual projects examined intersect with policy and evaluates their effectiveness in relation to landscape implementation. As for example the relation of the Catalan project with the policies in Catalonia and the impact of the completion of the project in Catalan legislation.

Sense of place and *low carbon* are widely used concepts, but as Hajer and Sijmons (2006) and Smit (2012) acknowledge, there is little agreement as to how they are used in practice. There is the potential to represent the social and cultural characteristics, but also interpret them in various technical ways. Gandy’s (2011) suggestion for a relationship between the landscape experience and the understanding of place plays a significant role for this research which explores the spatial and visual dimension of low carbon, quality of place and design. It is often implied that sustainability and low carbon relate to science and CO₂ emissions (Yuan et al., 2011) and that quality of space is an intangible element with difficulties in interpretation.

Space is discussed by Stephenson who highlights that ‘presenting landscape as ‘space’ has a long pedigree in assessment practice, but conveying its rich and messy place-values is still a rarity in practice’ (Stephenson, 2010:301). This demonstrates the potential of suggestions about how such messages can be effectively conveyed and spatially delivered by institutions as well as individuals. As a response to all the above,

the thesis will focus on the identified challenges in relation to the key concepts about landscape, the way in which such ideas can be visually expressed and communicated as well as the political framework – if any – influencing strategic landscape schemes.

1.4 Range of definitions

Crossing ‘boundaries’ between landscape, regional landscape design, sustainability and spatial quality, this research uses terms that have variable interpretations between disciplines, and being conducted in different countries has ‘national boundaries’ that are usually related to language or cultural differences. To explain and redefine key terms, a glossary (p.xii) has been created to present and clarify the meanings that have emerged from the research and the way that they are used in the thesis.

That includes terms that are considered important for the narrative of the thesis as well as differentiating similar terms from different concepts, for example ‘project management’ and ‘project framework’, where the meaning affects the understanding and the suggestions made by the thesis. Terms which are ‘borrowed’ from other languages (eg. Dutch, Spanish) fall into a third category in the glossary. Such words are usually found in the projects examined, and the translation in English does not always have the same impact as the original language, as for example *comarca* or *polder*.

1.5 Structure of the thesis

The thesis is divided into two Sections. Section I consists of the glossary, the introduction, the literature review and the methodology. The literature review evaluates key ideas aiming to illustrate how such concepts have been used by systematically identifying, locating and analysing related to the research questions (Robson, 2011). The methodology chapter presents the conceptual framework (§3) and it includes a pilot study, which shapes the way that the main body of the research unfolds. It establishes the research aims and sets out the three main case studies that form the research strategy. Section II includes the three chapters of findings and discussion as well as the conclusion chapter. Chapter 4 addresses how key elements are dealt in a strategic level, Chapter 5 focuses on communication and understanding of those concepts and the third chapter of this section (Chapter 6), looks at policies and delivery as well as whether the overall idea of landscape design works successfully. The data gathered by the pilot and the case studies is integrated into topics and themes rather than presented in chronological order. The final chapter of this thesis is the conclusions (Chapter 7) where the contribution to knowledge together with recommendations and future development are presented.

2. Evaluating the key ideas

2.1 Introduction

This chapter focuses on key themes and aims to set the scene for concepts relevant to the research, and to identify where this thesis can contribute. It is deliberately looking at a diverse body of literature from which a theoretical and methodological framework emerges (see Chapter 3). The chapter discusses regional scale, planning, spatial quality, design, sustainability and low carbon, visual representation, and policies. Recognising the ambiguity and complexity of the ideas involved, the introductory section presents a range of different interpretations to set the scene for the next steps of the thesis. This chapter firstly presents a basic understanding of the main ideas and secondly examines the part of literature that deals with the spatial aspect of these concepts. This process will provide an understanding of the ideas and the variation of the terms, and also help focus on the exploration of the spatial dimension of these, as defined by the research objectives.

Region and (its) scale

In large-scale developments, the range of conceptual interpretations that refer to a region often leads to varied perceptions across the UK, Europe and internationally. Forman (1995:135) describes it as ‘a broad geographical area with a common microclimate and sphere of human activity and interest’, however defining what constitutes a region across Europe might depend on the size of each country, or the scale at which each stakeholder is used to work. The term is used here as a diffuse concept with the blend of physical, cultural, political and natural elements without being limited by geographical or topographical characteristics.

According to the European Landscape Convention (ELC) landscape ‘means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors’ (Council of Europe, 2000:4). As a result, human perception is closely related with the landscape and so is the ‘region’. The different and various activities that occur in the surrounding areas of the region are often the reason for the development of many types of regions (Neuman (2000). The term is widely interpreted from housing regions, labor-market regions, commuting regions, watershed regions, air quality regions, natural regions, geologic regions, to economic, political and geographic regions (Neuman, 2000). Each region tends to be spatially distinctive as it is characterized by ‘no repeated pattern of landscapes’ (Forman, 1995:135). Selman (2006:5) has a different opinion when he states that ‘landscapes may derive from a combination of natural human factors, but equally they can be purely socially or purely naturally produced, and in the latter case there need to be no explicit cultural component’. However, the geographic extent of the activities and the physical characteristics that define the region, determine the area which is more related with planning and design (Neuman, 2000).

As Meijsmans et al. (2010:5) observe, operating at a strategic level becomes ‘increasingly important in tackling spatial questions and larger scale decisions’ in an efficient way. Neuman (2000) also explains that regional scale is one where - when it comes to design and planning - an individual designer cannot be identified as the ‘single author’ of this area, in contrast to urban or architectural scale. In practice, what is referred to as strategic planning delves into a variety of processes and scales that will be explored through the projects examined.

Strategic planning, design and scale

The *EU Compendium of Spatial Planning Systems and Policies* (CEC, 1997) draws a line between strategic planning at the regional or national level and land-use planning at the level of the municipality and the functional urban region (Albrechts, 2004:744), emphasizing the relevance of planning and scale and its importance when dealing with land use. Bryson and Roering (1996) argue that strategic planning is a combination of procedures, tools and concepts that must be associated carefully in order to accomplish desirable outcomes, demonstrating that spatial development requires a systemic approach including administration and legal processes, social and cultural characteristics, as well as plans and scale. They focus on the administration or managerial side of regional planning, suggesting that ‘strategic planning is often viewed as a system whereby managers go about making, implementing, and controlling important decisions across organizational functions and levels’ (Bryson and Roering, 1996:487).

Kunzmann (2000) gives a different approach linking spatial planning with a ‘public-sector-led’ process shaping and framing what a place may become, while Healey (1997) explores the social and spatial aspects of strategic planning. In a later paper, Healey offers a more complex explanation stating that ‘strategic spatial planning refers to self-conscious collective efforts to re-imagine a city, urban region or wider territory and to translate the result into priorities for area investment, conservation measures, strategic infrastructure investments and principles of land use regulation’ (Healey, 2004:46). In the context of the Netherlands, Van den Broeck gives a process based interpretation suggesting that ‘spatial planning is mainly ‘control-based’, using traditional bureaucratic instruments: legal land use plans, rules, prescriptions and bylaws defining what can and what cannot be done’ (Van den Broeck, 2008:2).

The UK National Planning Policy Framework (NPPF) published in 2012 is offering an interesting approach, connecting planning and design, and acknowledging that ‘good design is a key aspect of sustainable development, is indivisible from good planning and should contribute positively to making places better for people’ (Design Council, 2012:3). According to Sternberg (2000) ‘good design seeks to reintegrate the human experience of urban form in the face of real estate markets that would treat land and buildings as discrete commodities’. Meijsmans et al. (2010), supporting this view, explore how plan development can be facilitated by regional design, whereas CABE (2006) argues that landscape design and site planning cannot be treated differently.

Quality of space

Spatial quality is often unclear since this nebulous concept relates to many disciplines. For some, quality of space should satisfy the expectations of the community (Moulaert et al., 2012; Moulaert et al., 2009; Van den Broeck, 2008), while for others it speaks about elements of spatial indications Albrechts (2004). The idea has been defined as ‘urban quality’ (Chapman and Larkham, 1999), ‘good city form’ (Lynch, 1984), ‘livable city’ (Southworth, 2003), or something produced by ‘good design’ (Sternberg, 2000), ‘quality planning’ (Creedy et al., 2007), ‘good planning process’ and an ‘effective planning process’ (Conroy and Berke, 2004).

Smit (2012) presents the same concept focusing on the district scale and suggests that three types appear. The ‘physical spatial quality’ including features, shops and professional structures, the ‘socio-economic spatial quality’ that relates to creative firms and the ‘work-life spatial quality’ where residential, children and caring facilities belong. Vizzari (2011) suggests that spatial quality relates to quality of life and the way in which people live in the landscape and that it is ‘strongly bound to landscape

components and features' (Vizzari, 2011:109), while Van Gerwen (2006) argues that spatial quality is a 'dynamical process' that continuously develops and alternates, and not a 'static way to measure' landscape projects.

Low Carbon in the landscape

It is no easier to define low carbon since it is a concept connected to resilience, sustainability and landscape quality. Nearly two decades ago Leal Filho (2000:9) stated that 'Sustainability is today one of the most widely used word in the scientific field as a whole and in the environmental sciences in particular, but the analysis of the evolution of such a concept is a difficult exercise'. Yuan et al. (2011) suggest that this is still true, and argue that the concepts of low carbon and sustainability have been widely advocated, but the extent to which these ideas can be embedded in regional planning is not easy to define.

The acceptance of the multiplicity of its interpretation in a European and international level (Baeumler et al., 2012; Mulugetta and Urban, 2010) will enhance the understanding and analysis of the landscape projects. Feliciano and Prospero (2011:505) wonder, 'are we talking about lifestyles, activities, or enterprises? Are we talking about individual or voluntary behaviour change or a policy framework that seeks to encourage behaviour change by regulatory force?' There is a notion suggesting that low carbon engages more with the concepts of energy and transport (Bulkeley et al., 2011), however this study seeks to extend this, and looks for evidence that sustainability and low carbon also apply to other ideas. Termorshuizen et al. (2007), in order to highlight that low carbon has a major impact on the land, use Rio's declaration of the environment statement; 'sustainable development is widely accepted as a strategic framework for decisions on the future use of land' (IUCN, 1992).

In general, authors either use the terms interchangeably (Liang, 2010; Yuan et al., 2011) or choose one of them and carry it through the whole paper (Conroy and Berke, 2004; Leal Filho, 2000). Since the landscape interpretation of the low carbon and sustainability concepts varies depending on the individual, cultural background, country or activity, the research acknowledges that there is no significant reason to use only one of them and exclude the other.

Pictorial forms in the landscape project

The thesis will examine a variety of pictorial forms, evaluating their role in the project process and their effectiveness in communication of ideas. Visuals, drawings and pictorial forms will be investigated as a way of contributing to the process and impact on decision making. A number of authors present various types of drawings that are used in landscape architecture such as conceptual drawings, sketches, technical drawings and, most recently, digital techniques and methods (Cantrell and Michaels, 2010; Hannibal, 2013; Moore, 2003). As Corner (1992) explains, each party or professional discipline has its own interpretation or understanding of space and therefore the drawings produced may vary ‘from a cartographer's map, to an ecologist's transect, to an artist's perspective rendering’, depending on the emphasis given in each landscape strategy. However, it is argued that maps are ‘exclusively confined to illustrate the locations of homogenous scenic areas’ (Stephenson, 2010:305) and also that map comparison from different points in time has revealed the loss of cultural elements (Ewald, 2001). Taking the above into consideration the thesis explores a variety of visual representations as these are used by landscape schemes. Moore (2009:40), giving another dimension of visuals, states that ‘drawing is thought to improve the power of observation and may enhance the ability to externalize what is in

the mind more quickly and effectively’, while Sullivan (2014) suggests that drawing is an act of thinking and seeing clearly when it comes to landscape developments. Baker (2014:76) also highlights that there is a ‘range of graphic techniques which is used to record and analyze factual information’, but Stephenson (2010:301) insists that while tangible values are easily expressed and communicated, the less tangible ‘place-time-subjective qualities are problematic to record and communicate, and are thus largely overlooked or confined to a minor role’.

Throughout this section a range of definitions and terms has been presented to illustrate the diversity of the concepts. The thesis explores the developing ideas underpinning the terms and the way these can affect communication, interpretation and decision making in regional landscape schemes.

2.2 Demonstrating the spatial dimension of low carbon

This section will examine whether and how low carbon and sustainability ideas have been demonstrated in a spatial context and will cite large-scale examples. Yuan et al. (2011) identify that there is a widely-held aspiration for a ‘low carbon world’ where society and economy have a significant role, and they admit that there is also a range of models used: for example the ‘low-carbon city’, ‘low-carbon community’ and ‘low-carbon life’. Technical elements including CO₂ emissions, carbon footprint, arithmetic entities and scientific measurement techniques are also used to establish low carbon in relation to space (Yuan et al., 2011).

Bridge et al. (2013:331) argue that the spatial implications are evident, either through ‘reconfiguring current spatial patterns of economic and social activity’ or focusing on energy form of energy production and consumption (Bulkeley et al., 2011). The UK’s Foresight Programme on Sustainable Energy Management and the Built Environment

has examined how the transition to ‘secure, sustainable, low-carbon energy systems could be managed in part by re-examining the form, structure and spatial organisation of urban landscapes’ (Bridge et al., 2013), showing that a spatial understanding of such elements starts being developed.

However, Jiusto (2009:333), emphasizing the impact of this evolution, states that ‘a low-carbon energy transition is likely to be as significant - and its social, technological and geographical implications as hard to imagine - as the shift from wood to coal’. The understanding that sustainable development can be based on principles such as ‘harmony with nature’, ‘liveable built environment’, ‘place-based economy’ and ‘responsible regionalism’ (Conroy and Berke, 2004), has an impact on seeking explicit and implicit ways where a sustainable life style could be proposed on a large scale. For example, revisiting the garden city movement and introducing the late-twentieth-century idea of eco city, this section aims to demonstrate whether similar perceptions on sustainability were embedded in early strategic schemes.

Neuman (2000) explains that it is widely assumed that the physical form of the region and interaction with nature were the focus of the garden city movement at the end of the 19th century or early 20th century, as evidenced in the work of Ebenezer Howard, Frederick Law Olmsted, Peter Kropotkin and Patrick Geddes. Unpacking the ideas behind Ebenezer Howard’s statement that ‘Town and Country must be married and out of this joyous union will spring a new hope, a new life, a new civilisation’ (Howard, 1946:10), it can be suggested that the intention of garden cities was to create integrated communities, minimizing commuting and increasing social interaction, explaining why there is still so much interest in this concept. Therefore, what nowadays are described as low carbon and sustainability concepts have similarities with the ideas introduced by the garden city movement over a century ago.

Larkham and Adams (2011) state that the rise of interest in garden cities and the environment has allowed spatial planning to develop a wider approach to demonstrate sustainability. Examples can also be found in the late - twentieth century - concept of eco cities, integrating green and sustainable elements in the urban environment (Joss, 2010). Roseland (2001) states that eco cities bring together ideas from several disciplines such as urban planning, transportation, health, housing, energy, economic development, natural habitats, public participation, and social justice; connecting some of the current concepts of low carbon with older notions of social and economic development. It has also been suggested that eco towns would pioneer sustainable living in order to deal with the rapidly-growing challenge of climate change (Barclay, 2011). Another dimension to the debate is provided by Heiskanen et al. (2010), discussing about various low carbon communities, and by Raven et al. (2008) who concentrate on the primary role of the citizen in a sustainable community.

2.2.1 Examples of large-scale visualisations

This section presents sample drawings used as a sequence of strategic schemes showing how different stakeholders have attempted to express the complex ideas of sustainability, low carbon and climate challenge at an international level. Selected for their significant impact on the location, they have influenced large-scale decision making, demonstrating a variety of visual information and fulfilling different purposes. The key concepts are addressed either in explicit or implicit ways following the trends of each chronological era and challenging perceptions about the landscape and the region. Embracing different strategies, the four drawings deal with various aspects of communicating sustainability, from selling an idea (Fig.1, Copenhagen Finger Plan), demonstrating relationships and possibilities (Fig.2, Plan Ooievaar), visualising a

landscape proposal (Fig.3, IJ-werken) and presenting the environmental impact on the landscape (Fig.4, Ethylene Network).

The Copenhagen 'Finger Plan' (Fig.1), introduced in 1947 by the architects and town planners Peter Bredsdorff and Steen Eiler Rasmussen, has greatly influenced the development of Copenhagen and structured the way later generations conceptualise the city and the region. Figure 1, which is the 'selling idea' of the strategy and front page of the plan, visualizes the future development as a hand. Pedrolì et al. (2007) explain that the 'palm' was visualised as the existing city centre, the 'fingers' pointing along future cities that radiated in five directions from the centre and the agricultural and recreational land was allocated as the open areas between the 'fingers'. As Vejre et al. (2007) explain, the impact of the Copenhagen Finger Plan is so significant that it 'became an icon in Danish and international planning debate', guiding infrastructure, urban development and green space in the city of Copenhagen.

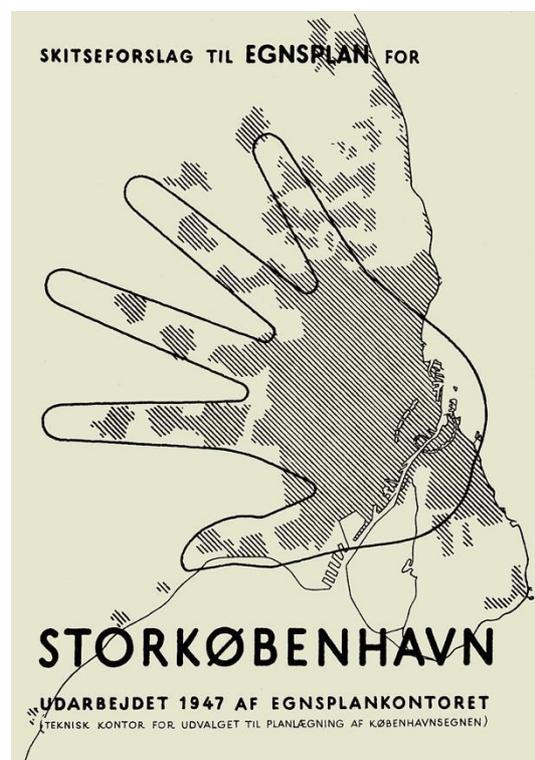


Figure 1: Finger Plan, Copenhagen, 1947. The front page of the plan, visualising a landscape strategy as a hand. The palm represents the compact urban areas and the fingers current and future developments. Source: <http://www.sustainablecitiescollective.com/urbant>.

Even though they explain that in its original version the Finger Plan dealt with open space to a small extent, they admit that the agricultural landscapes and open spaces demonstrated were not subject of planning measures at that time (Vejre et al., 2007). Therefore, one could argue that the Finger Plan functioned as a framework for urban space and the development of urban green areas, integrating an environmental message, promoting accessibility to open space and agriculture, visualising how sustainability could be interpreted at the time. Explaining its importance but also contemporary use, Larkham (2017:9) states that ‘the finger plan is still an essential plan of the Copenhagen’s planning, being regularly reviewed and updated’ and continues arguing that ‘a simple plan, effectively communicated, can be responsive to changing circumstances and needs’.

The ‘Plan Ooievaar’ (Fig.2), created in 1985, was awarded the first Eo Wijers³ competition prize under the theme ‘The Netherlands: Land of Rivers’. It addresses the Netherlands river land at a regional scale and demonstrates interaction between spatial activities and nature. Bulkens et al. (2016) explain that the drawing had, as a leading principle, the concept of ‘new nature’ aiming to ‘help’ in its restoration and therefore it visualizes the creation of nature in the river floodplains. According to Sijmons (2002), the basin areas support agrarian use and the built-in double water system (high and low level) can allow the farmers to treat their land hydrologically depending on its specific use. The aim was to have a river system combined by grass vegetation, open water and woodlands (Bulkens et al., 2016) integrating ideas of nature, sustainability and sense of place at a time where such concepts were not key ideas in a regional plan.

³ The Eo Wijers Foundation is an independent network that contributes to improving the spatial quality of the Netherlands. The foundation is committed to strengthening the role of design and the contribution of designers in top-level area development and has a special attention to young designers. The foundation aims to achieve its goal by organizing contests with a focus on regional design and their actual implementation.

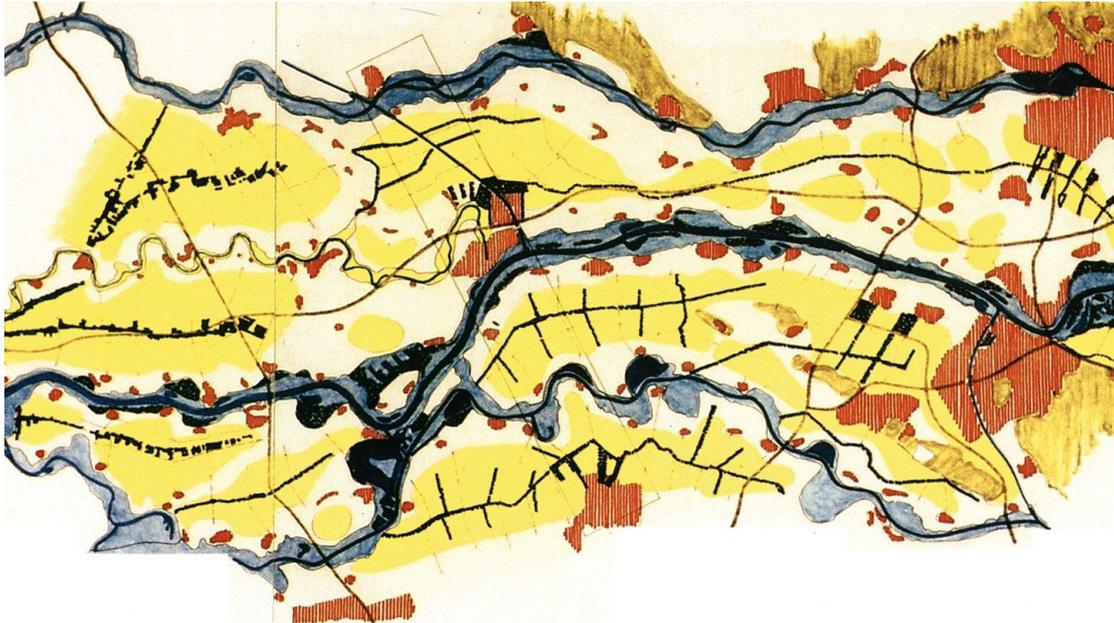


Figure 2: Plan Ooievaar. Van den Broeck (2008) explains that this plan marked a new generation of regional scale design demonstrating environmental elements. The plan provided a modern way of coping with the floods between the water storage and nature development. The idea has been integrated into policy papers and tested in real projects. Source: hnsland.nl.

The implementation of a part of the Ooievaar Plan by the Dutch government a few years later (1990) demonstrates the influence of visual communication on administration and public stakeholders, providing concepts for ‘new nature’⁴ (Bulken et al., 2016) and challenging perceptions of what sustainability mean for the landscape and how these can be delivered in practice.

The landscape proposal of the IJ-Werken project (Fig.3) demonstrates a smaller scale example, dealing with issues of water safety, climate change and connectivity.

Introduced in 2006 for the seventh Eo Wijers competition in the Netherlands, it won

⁴ Bulken et al. (2016) present a take on new nature stating that ‘‘although ‘new nature’ in ecological discourses is often presented as the return to a putative state of nature prior to human intervention, this paper has shown how the creation of ‘new nature’ actually entails intense human practices, such that it cannot be regarded as pristine or primeval. ‘New nature’ became part of Dutch nature development discourses when, in 1968, ‘spontaneous nature’ began to emerge out of the marshy part of the reclaimed South Flevoland polder. This area was initially earmarked for industrial activities and glasshouses, but protracted delays due to prevailing economic circumstances in the 1970s meant that by the time the plans for this area were brought up again, a thriving diversity of plant and animal species had begun to inhabit the area without any human intervention’’.

the second prize, and provided a clear idea of the land use and showing a good understanding of the spatial and physical context of the broader area of Amsterdam.



Figure 3: Design of IJwerken, 2006, Netherlands. It was designed by a team of designers from Dijk&co, Annemiek Diekman, MUST and DSP. Source: Meijsmans et al. (2010).

As landscape practice Dijk&co (2017) explains ‘the regions around Alkmaar Purmerend, Almere Hout, Utrecht and the Gooi are largely the sustainable future of the West wing’. IJ-werken presents a vision for the region around IJmeer and the country of the Netherlands, as it shows the way in which the landscape can develop. The emphasis given to the environmental aspects reveals the importance of the hydrological and ecological situation in IJmeer. The proposal for a new dam is creating an important water buffer having a beneficial effect on the ecology, revealing a well thought response to the future challenges of the area. The concept of a separation dike between IJmeer and Markemeer has a significant impact on the region. Markemeer is the North wing expansion and ensures drainage while IJmeer maintains a constant level of water allowing development of ecology and improving connectivity.

Figure 4 demonstrates the condition of a region resulting from years of environmental abuse along the river system in North America. The drawing is extracted from the book *Petrochemical America* and is part of a series of speculative drawings unpacking ‘the complex cultural, physical and economic ecologies along 150 miles of the Mississippi River, from Baton Rouge to New Orleans, an area of intense chemical production’ (Misrach and Orff, 2014). The drawing illustrates the pipes, tank farms and conduits for ethylene in the area along the Mississippi river banks, making deliberate choices of a ‘black river’ and ‘bleeding coasts’, visualising the global impact of petrochemicals on the landscape. As Misrach and Orff (2014) explain, visual materials like this unpack cultural, physical and economic issues of the whole region. Demonstrating the existing situation of petrochemicals in the broader area this pushes the reader wonder of the consequences of such actions in the Mississippi river, while the Ethylene Network is pursuing strong environmental messages at a strategic scale, but with a different purpose from the three previous examples.



Figure 4: The Ethylene Network. Pipeline intersection along the Mississippi river showing the landscape of petrochemical industry of the area, the conduits of ethylene, tank farms and pipes. Source: Misrach and Orff (2014).

2.3 Examining the relationship between sense of place and landscape quality in large-scale infrastructure projects

Following the demonstration of low carbon ideas, this section focuses on the relationship between sense of place and landscape quality exploring their integration in infrastructure projects. It is no easier to define spatial quality in a strategic level than it is sustainability: however, a number of authors explore the possibilities of a relationship between these ideas and landscape schemes.

Shannon and Smets (2010:10), suggest that ‘infrastructural development is not merely a technical matter to be left to traffic planners, engineers, and politicians, but a crosscutting field that involves multiple sectors and where the role of designer is essential’, embracing the importance of quality and the impact that this can have for a strategic development. Daniel (2001:270) states that ‘the nature of aesthetic quality is a centuries-old area of puzzlement, study and controversy for philosophers, artists, designers and now for environmental managers and policy makers’, explaining that legislation and environment have also been introduced to landscape infrastructure, something that was not so apparent in the past. Van den Broeck (2008) explores how a ‘better space’ can be implemented in large scale and suggests that a place needs a focus on ‘what should be’ and ‘what can’ considering ethical and social principles. What is often called ‘sense of place’, ‘genius loci’ or spirit of place (Jivén and Larkham, 2003; Moore, 2009; Norberg-Schulz, 1980) has significant links with landscape quality, but its integration in large scale planning mainly responds to the concepts of ‘scenery’, ‘scenic beauty’, ‘environmental elements’, or ‘cultural landscapes’ (Ewald, 2001) without necessarily demonstrating more detailed spatial characteristics. There are different notions about the ways to understand or measure quality of space. On the one hand Ewald (2001) suggests that landscape aesthetics as well as the evaluation of

scenery are very important for the understanding of landscape. On the other hand Arriaza et al. (2004) and Cañas et al. (2009) argue that landscape quality can be assessed through mathematical models, numerical methods and spatial models. Daniel (2001:269) also suggests that in some cases concepts such as ‘landscape meaning and sense of place – memories, inferences, extraction of symbolic meaning’ have also been taken into account.

This relation with strategic schemes is also addressed by Moulaert et al. (2011) who state that spatial quality will be ‘broadened from a purely ‘adding up’ of different spatial quality preferences, estranged from their social context, to a relational definition that mobilizes the integrative potential of a social innovation reading of space, research by design and strategic/institutional spatial planning’. Exploring how effective this relationship between infrastructure developments and sense of place can be, Healey (2004:61) agrees that ‘by influencing agendas of projects and schemes for physical development, and by shaping the values with which the qualities of places are promoted and managed’, the potential for a sustainable development is improved. According to that the greater the connection of a strategic scheme with ideas promoting spatial quality and sense of place, the greater the chance there is for such concepts to be integrated in infrastructure developments. This research feels that Shannon and Smets and Moulaert et al. are more relevant to this research as they explore the concepts of sense of place and spatial quality in relation to strategic design and planning.

Revisiting the examples of garden cities and eco towns introduced earlier (§2.2), this section demonstrates the way in which sense of place connects to landscape quality, encouraging a new way of living and impact on the social and cultural interactions between people and place. The ideas expressed through the designs of two UK based eco towns, Hanham Hall (Fig.5) and the eco region of Thames Gateway (Fig.6)

demonstrate strong indications of the importance of spirit of place in smaller and larger infrastructure projects. According to Baker (2014), it is important to ‘capture the spirit of place’ to demonstrate an understanding of a landscape through direct experience as well as through research into its background, and truly understand the landscape, before seeking to express its qualities and amenities.



Figure 5: Hanham Hall is an eco-town scheme which provides the joy of nature and give the residents the opportunity to explore sense of place. Source: Hanham (2013).

The examples of Hanham Hall (Fig.5) and Thames Gateway (Fig.6) deal with quality as well as environmental stability, providing practical examples of how large-scale infrastructure can relate to sense of place and addressing the questions about ways in which spatial quality can be embedded on a large scale (Goethals, 2007). These schemes have been designed taking climate challenges into account and aiming to produce a design that will adapt to environmental characteristics of the future. In addition, the goal is to provide a safe, but also engaging, landscape where residents can enjoy its beauty.

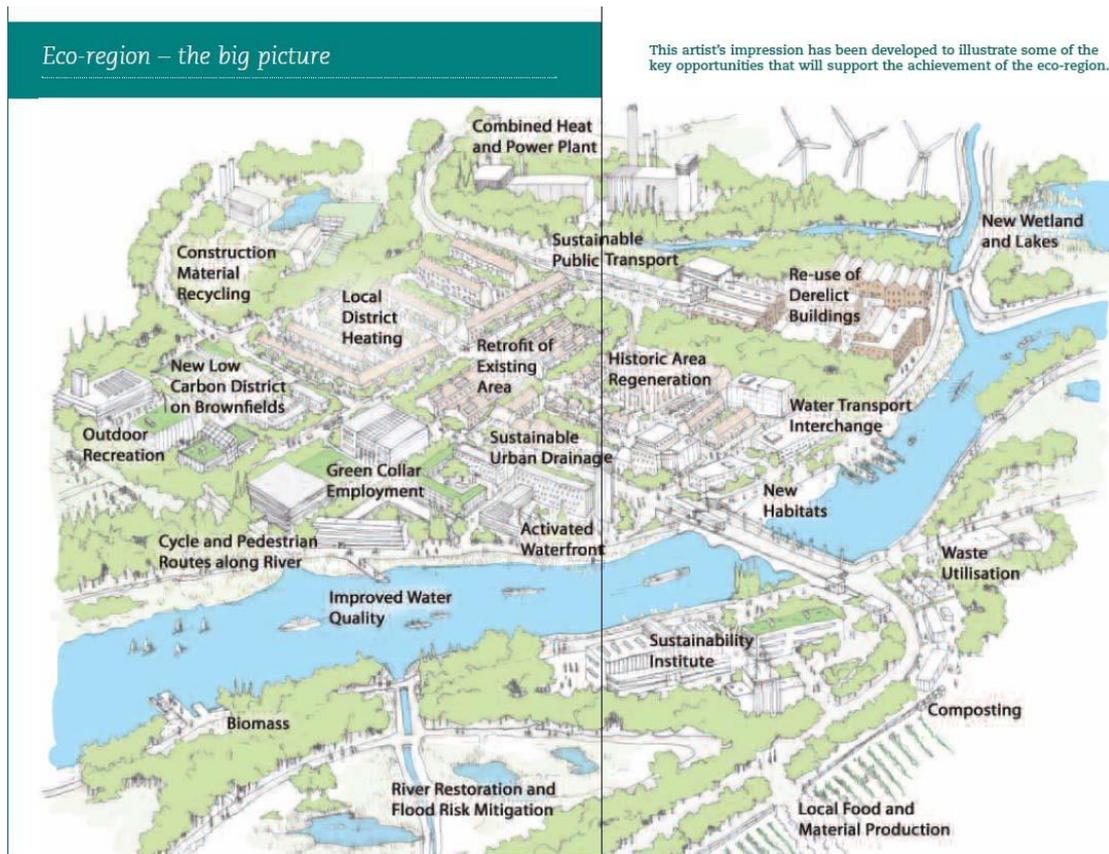


Figure 6: The Thames Gateway eco-region seen as a place where economic and social development take full account of the imperative of ecological sustainability. Source: HM_Government (2008).

2.4 Nature of spatial quality and low carbon priorities

Spatial quality and low carbon are closely related to the social and cultural elements of design and planning. This section presents the priorities for both concepts and how they are delivered and interpreted in landscape schemes. Discussing quality of space and presenting examples where this is demonstrated is not an easy task, however Lutz (2008:5) argues that ‘space only has true quality if it contributes to the quality of life’, while Fallman (2008) is interested on how ‘elegantly’ these ideas fit in to the content. Therefore, it can be suggested that what Daniel (2001:269) proposes, ‘in the context of landscape quality assessment, quality has been taken to encompass everything from basic utilitarian wants (food, water, shelter, recreation opportunities) to spiritual needs

(oneness with nature, sense of a higher power) to intrinsic natural values', is a way to identify the nature of such ideas and prioritize their spatial dimension.

The Netherlands has a long tradition of working with these ideas (Assink and Groenendijk, 2009; Tisma, 2003) and therefore there are pioneer examples trying to address these key concepts in spatial strategies. Franssen (2013) suggests that even in such 'early adopter' locations, the concept of landscape quality will have a greater potential if it is more closely linked to the culture of landscape development. Challenges related to its communication, demonstration and spatial delivery still require investigation.

Low carbon in the landscape has also various spatial interpretations. One way is to connect with CO₂ emissions (Wiedmann and Minx, 2008), but there is also evidence that sustainable development can be applied through land use planning (Berke, 1994; Rees, 1995), although concerns have been raised by Conroy and Berk (2004:1382), who state that there is 'little critical evaluation of what can be done in planning practice that will help promote sustainable development'. There is also the notion that such concepts can have a strong link with the landscape scale. Bridge et al. (2013:339) state that 'implementing a low-carbon economy will be a simultaneously creative and destructive process that significantly changes how different places are related to each other, economically, politically and even culturally, and at a range of different scales'. There are examples that demonstrate a technocratic view looking at where these low carbon elements can be placed - their spatial location. Low carbon is often interpreted in terms of photovoltaic systems in urban and rural environments (Redweik et al., 2013), ecological landscape (Makhzoumi and Pungetti, 2003), acceptable landscape locations for wind farms (Cowell, 2010) and solar energy in landscape (Pokorný, 2001) or has a focus on transport reflecting energy and fossil fuels (Harto et al., 2010).

Low Choy (2006) argues that on regional-scale planning there is still a lot of room for development, however a renewed emphasis on addressing the sustainability challenges has been given. In the case of spatial quality it is suggested that multidisciplinary expertise is essential in order to identify what qualities are important for the communities where landscape is a lived-in experience (Stephenson, 2010). Franssen (2013), introducing the relationship between quality and visual representation, suggests that a way that this can be done is through the connection with landscape design and planning.

2.5 The role of drawings and pictorial forms communicating landscape strategies

‘Drawing turns the creative mind to expose its workings. Drawing discloses the heart of visual thought, coalesces spirit and perception, conjures imagination; drawing is an act of meditation, an exorcism of disorder; a courting of artistic ideas; above all it is the lean instrument of visual formation and the vortex of artistic sensibility’, Hill 1966 quoted in Sullivan (2014:1).

Drawings can communicate ideas in many aspects, but this section explores how visuals affect decision making in large-scale schemes. Meijsmans et al. (2010), dealing with the regional scale, suggest that it can be possible for drawings to facilitate plan development and policy formulation, however they question the way in which this can happen in strategic scale. Both Sullivan (2014) and Moore (2003) state that drawing a landscape enables us to better understand it, revealing its spatial dimension. Sullivan (2014:7) continues, explaining that ‘drawing a landscape allows you to visualize it in a new way. As opposed to taking a photograph, drawing a landscape enables you to really understand it’ and make it an integral part of the active process making it a tool for thinking analysis.

While one could wonder about the relationship of better understanding and communication, Do and Gross (1996) suggest that visual representations such as freehand sketches and concept diagrams play a significant role in design problem solving and they also suggest that there is ‘an agreement that drawing plays an important role in supporting design reasoning’ (Do and Gross, 1996:2). Menezes and Lawson (2006) take a step forward by distinguishing different types of drawings explaining that conceptual drawings, sketches and abstract diagrams all seem to impact on the process. Examining how this connects with the landscape scale, Moore (2013a) states that ‘we have to create a new approach. A way to understand the landscape not only as a physical entity, but also as a way of life’.

In relation to landscape design, although Sullivan (2014) suggests that drawing is a ‘design thinking’ tool and Do and Gross (1996) that it is a ‘vehicle for design reasoning’, there is very limited literature on how this is reflected in actual spatial infrastructure. According to Lavoie (2006), drawings involve an ‘imaginative perception’ that allows the visual representation of intangible elements, they can illustrate the essence of place and uncover its transformations, while the same time revealing the scale and natural characteristics of an area. Neuman (2000) explains that a system of places, cities, towns, and villages is connected to infrastructure (roads, transit, utilities, and communication pathways) through design, and therefore an investigation of the role of drawings in landscape strategies will be valuable for this study.

2.5.1 Drawings and visuals: impact on the design discourse

The focus of this thesis (see p.3) is on the role drawings have in the project process and communication and not in the way they formulate the design (the ‘design process’). Although there are a few landscape examples suggesting that visuals have a significant impact on the communication of key ideas to the project team as well as the public, there is little evidence of how this occurs in regional strategies. A number of authors have argued that designers often have ‘graphical conversations’ (Schon and Wiggins, 1992) or have ‘engaged’ in conversations with the drawing (Lawson, 1994) and therefore one could wonder if this affects the project process long before the design is communicated to external stakeholders.

Meijsmans et al. suggest that drawings are key instruments communicating new forms of regional planning and they emphasise that ‘the design tool is explicitly addressed for its capability as a vehicle for identifying stakeholders and organising the process of negotiation and coproduction’ (Meijsmans et al., 2010:6). Suggesting that pictorial forms can affect the way in which infrastructure schemes develop, Moore (2010b:21) explains that ‘anyone who has a responsibility for the landscape, whether they deal with words rather than drawings, a computer rather than a pencil, they are effecting, predicting or managing spatial change’. Therefore, one could argue that drawings impact on the way proposals evolve as well as the way in which these proposals are interpreted and materialised during the implementation phase.

Explaining how visuals can be a communication tool, carrying many different elements, Sullivan (2014:7) states that ‘landscape drawing is not the reproduction of nature, it is an expression of the emotions, sensations, and feelings that the landscape impresses on the designer. It is the creation of atmosphere and space’. As a result, it can be suggested that Sullivan is making the argument that drawings can reveal the inner values of a

landscape, affecting the design response, and influencing the project development. Discussing the impact that drawings have on the decisions made during a landscape development, Corner admits that while drawings have certain limits in representing the landscape experience, they remain an ‘extraordinary powerful medium in relation to the production of landscapes’ (Corner, 1992:159). He also suggests that landscape drawing can be defined in three main types: projection, notation and representation. The projection ‘has to do with direct analogies between drawing and construction, and includes the plan, the elevation, the section, the axonometric, and, in a lesser way, the perspective’ (Corner, 1992:150). Notation type drawings can ‘identify the parts of a schema, enabling them to be reproduced, enacted or performed’ (Corner, 1992:152) and representational drawings ‘aim to represent a given landscape or building, seeking to elicit the same experiential effects but in a different medium’ (Corner, 1992:154). Corner (1992) refers to architectural landscape drawing as a ‘textual medium secondary to the actual landscape’, although he admits it is much more than just reflection and analysis. He argues it is ‘an eidetic and generative activity, one where drawing acts as a producing agent or ideational catalyst’. Lavoie (2006), enhancing the idea of understanding landscape, explains that drawing creates distinction within the landscape components and their characteristics and therefore the act of drawing the landscape results in a heightened awareness of place. Magalhães and Providência (2013) explain that the act of drawing is a way to support, stimulate and develop ideas to form a concrete concept for the landscape project, while Moore (2009:79) gives an example of the design discourse, explaining that pictorial forms ‘demonstrate the extent to which strategic regional planning is contextually determined and dependent on the conceptual vision, the culture, time and place’. Current literature supports the argument that landscape architecture is a profession engaged in ‘looking, thinking and doing’ (Lavoie,

2006), but also that drawing the landscape is an activity based on the 'drawer' (Corner, 1992) or the designer, resulting in a wide range of potential visual outcomes and suggesting that further investigation of the role of drawing in strategic schemes would be useful. From all the above it can be suggested that visual representations can have a significant impact on the communication of the ideas and the way in which these evolve, however the reasons why this is happening require investigation.

2.6 Policies and politics in the landscape context

Although this literature review does not focus on politics itself, however it is considered useful to introduce some of the sources that discuss policies and affect decision making in spatial development. Almost four decades ago the influential planning academic Peter Hall had stated that 'planning decisions result from complex interactions among three groups of actors: the community, the bureaucrats and professionals within government; and the politicians at every level of government' (Hall, 1980:47), building a connection between governance, policies and landscape planning. However, there is a little being written currently about the communication of landscape planning and its relation to policy. This research considers drawings as a communication tool and investigates how this tool relates to policies and legislation.

According to Mata Olmo and De Meer (2010:107), there is a need for the development of an action plan, based on policies and local administration processes with the landscape, which 'attempts to contribute to the development based on territorial government involving cooperation and coordination between social, public and private agents, with feasible and sustainable economic alternatives, capable of strengthening the landscape's social tissue and improving its external image'. Moore (2009) explains that many different institutions take responsibility for landscape issues on a global scale

and that landscape can be attached to spatial planning, transport, economics, agriculture, environment, engineering, culture or even health and education. Therefore, the relationship with legal schemes and governmental strategies is paramount if the aim is to create a sustainable and quality space. 'The European Environment Agency reports continuously on a range of landscape changes that are high on the political agenda, such as urban sprawl, biodiversity loss and soil sealing affecting agricultural land' (Dramstad and Fjellstad, 2011:330), embracing the integration of 'politics', 'policies' and 'legislation' in spatial strategies.

According to Rose (2007:472), 'the politics of landscape traditionally refer to the political content of landscape representation' and very often relates to power. As a result, landscape is seen as the spatial location where such activities evolve, putting little emphasis on legislation that aims to enhance the cultural, social and quality elements of space. Rose (2007) clarifies that landscape politics do not refer to the political implications regarding the set image of landscape, but to the politics of managing a landscape whose image cannot be set. He suggests that legislation can impact on how the landscape is perceived, explaining that 'politics is the art of power that describes quite literally *how we manage the perhaps*' (Rose, 2007:472), and even though legal schemes might be 'feeble' are necessary to manage an 'unmanageable situation'.

Dramstad and Fjellstad (2011) wonder about the relation between science and policy in the landscape context, examining how policies are effectively involved in the landscape and if their engagement impacts on landscape strategies and sustainable development. A dialogue between all those who are involved with the landscape infrastructure, such as researchers, policy makers, planners, landowners and developers, shows the

importance of legislation but also indicates the significance of communication for the establishment of a sustainable development (Dramstad and Fjellstad, 2011).

2.6.1 The need for a regional landscape policy

The diversity between politics and landscape planning is investigated by a number of authors, revealing a range of interpretations and actions. Healey (2004), for example, explains that ‘strategic’ often indicates a higher level of administration or a different, perhaps more general or abstract, level of policy. So, Healey is not considering it as a measure of scale related to planning, but as a concept that can address a variety of interpretations depends on the field and the area of discussion. She also states that planning ‘implies a mode of governance (a form of politics) driven by the articulation of policies through some kind of deliberative process and the judgment of collective action in relation to these policies’ (Healey, 2004:46). In addition, it is argued that ‘strategic spatial planning may also have a political role in strengthening the voice of municipal government or regional bodies’ (Cooke et al., 2000; Hooghe, 1996), suggesting that despite the strong links that planning might have established with policy, there are occasions where these are not being considered, having an adverse impact on landscape development.

Giannakourou (2005:319) was stating, a decade ago, that the engagement of the ‘European Union (EU) in spatial planning has no binding force and cannot prescribe concrete legal or institutional requirements’, however she admitted that an ‘ongoing European debate and process on spatial cooperation can indirectly affect the planning context and practices’ (Giannakourou, 2005:319). The European Landscape Convention (ELC) has suggested that different stakeholders will integrate ELC’s measures, but a wide range of implementation actions can evolve between Europe and

the UK. In detail, the ELC suggests that stakeholders can ‘integrate landscape into its regional and town planning policies and in its cultural, environmental, agricultural, social and economic policies, as well as in any other policies with possible direct or indirect impact on landscape’ (Treaty Series, 2012:6). In order to put landscape policies into effect, stakeholders are expected to introduce instruments aimed at the management, protection and planning of the landscape (Treaty Series, 2012), while in strategic spatial planning, stakeholders can be encouraged to develop strategic agendas (Healey, 2004) demonstrating the importance of collaboration between the different institutions and different types of stakeholders.

In the Netherlands, ‘spatial organizing concepts have had an important leverage on national, provincial and local policy’ (Healey, 2004:52). Even though the National Spatial Planning Agency (VROM) of the Netherlands once had wide ranging influence, allowing it to suggest and appoint ‘spatial frames’ for different government departments (Hajer and Zonneveld, 2000; Wolsink, 2003) this is now much weakened following a change in legislation, losing some of its political influence. It is argued that this had reinforced a retreat in policy content in the Fifth NPD (National Policy Document on Spatial Planning) back to a narrow spatial planning agenda of managing the location of urban development (Healey, 2004), however there are current examples demonstrating links to regional and national legal schemes that will be presented through the projects examined. This section has investigated spatial strategies and policies, demonstrating the discussion about policies in the landscape context, however there is little evidence of how legislation impacts on the implementation of landscape strategies.

2.6.2 Policies around landscape elements; the cases of spatial quality and low carbon

The establishment of policies for key elements it has become quite important in the Netherlands, however Franssen (2013) argues that in Europe the concept of spatial quality is not been elaborated enough in policies, as for example ecology or infrastructure ideas are, highlighting that Dutch legislation processes are sometimes more advanced compared with other European countries and the UK. According to Healey (2004) the Fifth National Policy Document on Spatial Planning focused on spatial quality, but the main emphasis was on spatial development. Franssen (2013) also confirms that the ambition to enhance sense of place in landscape projects has begun to be incorporated in policy documents in the Netherlands, but there is still little evidence in project implementation. That might be a result of the ‘lack of knowledge of governmental officers’ (Franssen, 2013) or the ‘ambiguous’ concept of spatial quality by the government (De Jonge, 2009), that sometimes takes longer to address in large-scale developments.

Moore’s argument (§2.6) that landscape often relates to many institutions, for example health, culture, education agriculture and more, generates questions as to why this cannot happen with key elements such as sense of place and sustainability. Franssen (2013:8) explains that ‘on [a] national level the environment is point of focus in laws, which are of influence on spatial quality. But also at national level, spatial quality is not literally discussed’, however there is little evidence about how this can be achieved in practice and what process needs to be followed.

Legislation around the climate impact of a project also faces challenges in implementation of large-scale strategies. ‘Low carbon energy transition is experienced as the transformation of landscape’ state Bridge et al. (2013:335), in agreement with other authors who suggest that landscape has a key role in energy policy debate (Nadaï

and Van Der Horst, 2010; Pasqualetti, 2011). Landscape is often seen simply as the location where the energy technologies take place, as well as a way to identify spatial planning policies that will allow successful implementation of this transition (Wolsink, 2007). This argument demonstrates that landscape is not considered for its social, cultural and natural characteristics, but as a space where all these technologies will be placed, and therefore is overlooked by the current legislation. Another dimension to the debate, is discussed by landscape designer Steven Kamerling who states that ‘topics like water and ecology are covered by laws and procedures, which means they have to be considered when planning new developments. It would be good if sustainable urban design was also included in planning legislation and procedures’ (quoted in Meijer et al., 2011:537). Discussing the implementation process, Moore (2010a:110) proposes that in order ‘to have any real chance of providing a sustainable and lasting blueprint for the landscape, this way of working, needs to become wholeheartedly absorbed into all of the decision making institutions and organizations responsible for policy, strategic or regional planning at a national or international level’.

Policies and legislation in relation to landscape elements involving quality, sustainability and low carbon mainly focus on how to achieve a technological development instead of a holistic landscape approach. This research investigates the extent to which these qualities are delivered in spatial strategies, the role played by politics and the difference that institutions make in strategic developments.

2.6.3 The political argument of visual representation in the landscape project

‘The design process can be considered a multilingual dialogue in which, metaphorically speaking, the skill of the artisan meets the logic of the scientist and the practical wisdom of the leader. This characteristic explains why the domains of science and politics are

natural companions for design disciplines that are engaged in social issues like landscape and spatial planning' (De Jonge, 2009:199). De Jonge highlights the relationship between design, drawings and policies and the need for function as well as quality in a regional strategy. Some authors have suggested that landscape management, policy, planning and monitoring have increased needs in visualization of the landscape (Tahvanainen et al., 2002; Tress et al., 2001) and so an exploration of issues related to pictorial forms and politics is considered significant.

Tahvanainen et al. (2002) argue that environmental policy has an important impact on the visual quality of landscape, and that it is possible to assess the effect of management activities on scenic beauty through visualisation. Discussing the expression of landscape elements and how this impacts on decision making, Tress et al. (2001) state that a map is not only the medium to visualise and interpret the 'objective' knowledge of environmental conditions, but is also a powerful tool in communicating the perception and knowledge about landscape. Considering the variety of maps such as the more visual touristic maps of a city, compared to underground or tube maps designed to show direction, it can be argued that some of the maps are more pictorial where others are graphical. This reference to pictorial forms as a way of influencing perceptions has not been explicitly discussed in regional landscape strategies, however it is considered important for the interests of this research.

This section has presented some examples of landscape policies related to pictorial forms, however these often belong to environmental legislation aiming to enhance scenic beauty. It raises the question of whether visual representations can only be used as evaluation tools or whether their integration to landscape policies will give them a more significant role in the landscape project.

2.7 Summary

By exploring the main issues and their interrelations this review aims to introduce the concepts that are important for the development of this investigation. The ambiguity and complexity of key ideas is acknowledged and some overlapping has been identified. There are cases where current literature is considering them as separate issues, even though the underlying ideas that run through the topics are usually related. Concepts that are the core of this research, such as spatial quality and low carbon, are emerging areas for landscape architecture and therefore there is little knowledge on their concepts in relation to large-scale landscape strategies. The concepts of drawings as well as politics are known and widely discussed; however, the link with the landscape is an area that is worth researching. As a result, further investigation related to the role of drawings and landscape policies in strategic developments is considered important.

The literature review is highlighting gaps in how the set of ideas this research deals with (low carbon, spatial quality and drawings) are currently integrated into landscape theorising and practice such as the discipline itself has not evolve a robust theoretical framework to deal with these issues. This research aims to contribute to an emerging framework.

3. Research Methodology

3.1 Introduction

This chapter focuses on the rationale underlying the methods of this study and the research tools that are used to meet its aims. The methodology is based on a pragmatic philosophy, however there is a professional focus on real world problems that sets the context of this thesis. The study proposes to explore significant landscape projects that boost the economic, cultural and sustainable growth of the region examining and evaluating the research objectives. An overview of how the study is designed and implemented as well as the research process and concept for the development of the methods will be presented and explained.

3.1.1 Overall Strategy – Conceptual theoretical framework

Pragmatics recognise that there are many ways of interpreting the world and undertaking research and that no single point of view can ever give the entire picture as there are multiple realities. This research uses a pragmatic methodology that as Onwuegbuzie and Leech (2005:377) explain ‘ascribes to the philosophy that the research question should drive the research method(s) used’ respond more closely to the area of enquiry. The study does not adopt the definition of ‘hermeneutics’, but it is an interpretative analysis based on the original Greek root of the word. The Greek verb *hermēneuein* means ‘to interpret’ and also *hermēneus* is the ‘interpreter’ and *hermēneutikos* is the ‘expert in interpretation’. Therefore the research might have some common characteristics with ‘hermeneutics’, but it is much closer to the original definition of the term, aiming ‘to reveal the inner meaning (*hyponoia*) of texts and

indicate the highest truth that points beyond the discourses' (Uždavinys, 2004). There is a wide scope incorporating live projects giving an analysis of design, sustainability and sense of place and the way these elements impact on project delivery.

Garrick (1999), wanting to show that the interpretation rests with the individual subjective experience, suggests that interpretative research is often used to 'justify experience-based methods' within professional or education organisations through an examination that doubts the philosophical assumptions of interpretative research, while other authors highlight that the aim is to firstly understand and also interpret the participants' experiences or the phenomenon studied (Ivey, 2013; Tuohy et al., 2013). Often described as 'hermeneutics' (Tuohy et al., 2013), this research method searches for a deeper meaning and understanding of the topic or developing a theory of interpretation. As Moore (2013c) explains, 'moving the purpose and methodology of design inquiry into such potentially ambiguous areas we have no choice but to engage with ideas at every stage of the process. From this perspective, any and every part of the design process becomes accessible to investigation' (Moore, 2013c).

As Smith (2011) explains, in a broader concept Interpretative Phenomenological Analysis (IPA) is very much related to the participants' attempts to make sense of their own experiences and also reflect on them during the interview with the researcher. In addition, the interpretative approach aims not only to reveal the experiences of the participants, but also their expertise in certain fields the research explores. The interviewees are selected for their great expertise and knowledge about landscape design and sustainability. The interviews will make the 'best use' of the interviewees' experience, while the same time giving them an important role in what is being discussed. In that way the researcher - interviewee relationship is neither too passive nor overly directed (Walsham, 1995).

3.1.2 Overall Strategy – Concept of methodology

This study based on the regional landscape projects aims to explore and socialize the ideas of a holistic low carbon landscape community. Figure 7 shows the overall strategy as well as the theoretical background at each phase of the methodology. The main methodological stages link to a broader concept and are separated into three main themes. They are described in this section as ‘Identification’, ‘Socialization’, and ‘Implementation’, and are attached to different case studies (§3.3 & §3.4), aiming to reveal a series of data related to sustainable and quality transitions in landscape spatial strategies. A pilot study and three case studies were chosen to reflect these different stages from identifying an idea, disseminating and implementing a landscape project in a large-scale. The thesis looks across the lifecycle of the projects and therefore that is designed to the researcher’s selection.

The **Identification** phase aims to reveal and describe low carbon and design objectives in current practice and the ways in which these are understood and interpreted by the experts in the field. This will help in the exploration of the concept and shape the development of future research. It consists of the pilot study exploring current ideas, and an evaluation of methods that could be used in the following stages based on a theoretical background built at the stage of the literature review. The **Socialization** phase relates to the first case study, examining how landscape ideas are disseminated and how values and social engagement impact on the landscape. This is followed by the **Implementation phase** where the mechanism of a sustainable regional scheme will be unpacked in order to reveal how such a process is possible and what the necessary steps for this type of development are. This will be investigated by examining two stages of regional landscape projects; one in an early design stage and another which has been completed. Having all the collected data as well as experience from the

previous case studies, it is anticipated that the implementation phase seeks to identify new approaches to the landscape strategies and explores decision making about regional design.

The approach to each case study will be discussed separately within each of them. An ethnographic study was not possible because in all three of the cases the researcher was more looking at history of those organisations, what decisions were taken, why they were taken and what was their effect. Accepting that ethnography has far different requirements in terms of extensive time and also that it would not necessarily uncover the material that the researcher needed for this thesis, an ethnographic study has not been conducted. A range of other approaches was considered but the scope and time of the work did not allow their exploration by the thesis.

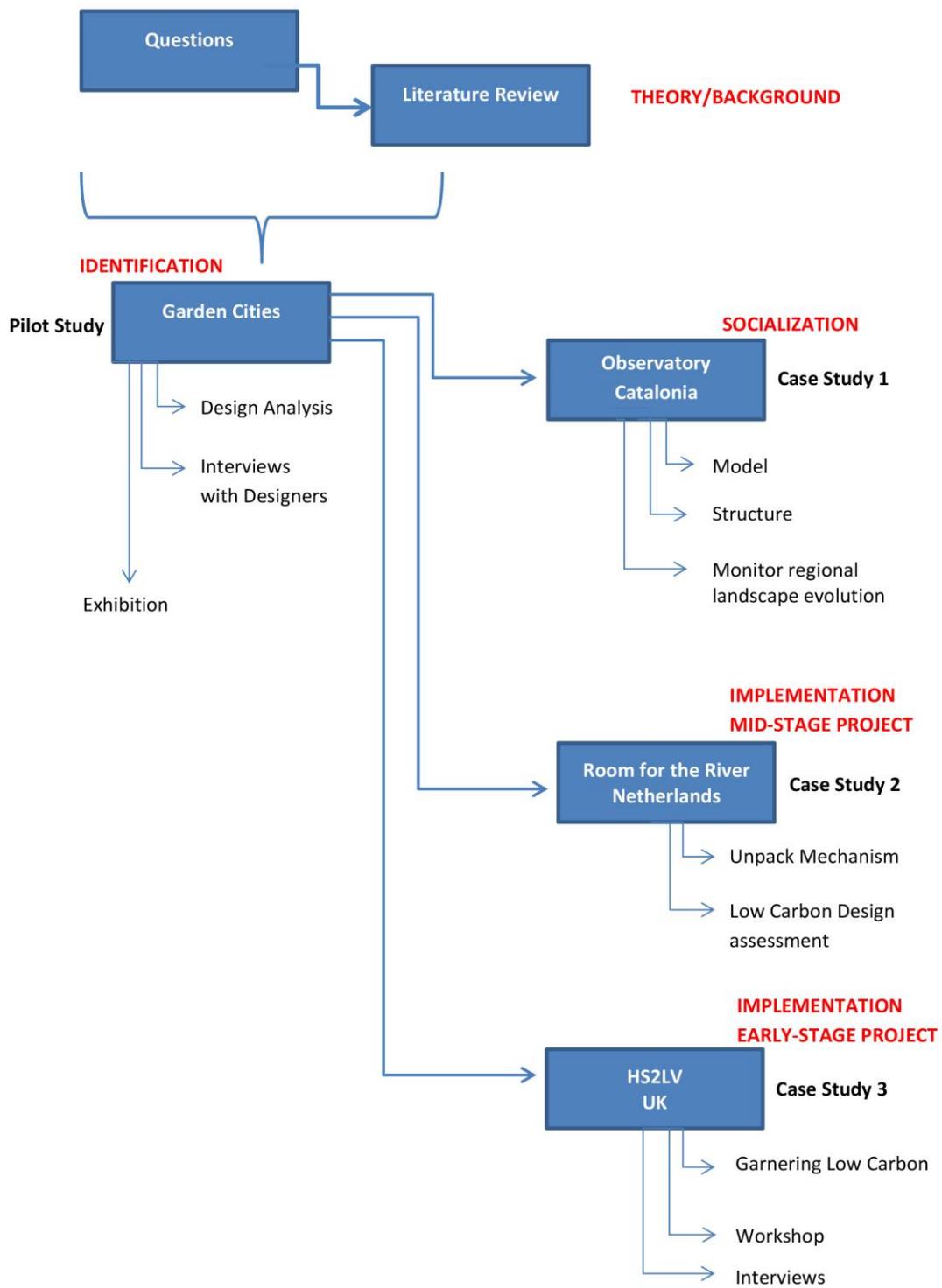


Figure 7: Concept of methodology, developed by the author, presenting the phases of Identification, Socialization and Implementation and the plan of work that will follow illustrating the case studies.

3.2 Identification of low carbon and design ideas (pilot study)

The ‘identification’ aims to validate the argument and support the methodology. As shown in Figure 7 (§3.1), this step follows the establishment of the research questions and the examination of the current literature. It is an important point in the research, as the preliminary evidence will help the researcher to form her thinking and establish the main body of the methodology. This is an evaluation on a conceptual level, focusing on developing the ideas that have emerged from the literature review and identifying whether there is a common language among professionals, and how experts are tackling challenges in different locations. It should not be perceived only as a basic ‘pilot study’ where the main goal is testing the data collection process, preparing for the interviews and exploring the effectiveness of the research process. The pilot study will delve into the low carbon concept together with the impact of drawings in regional schemes, by evaluating the Wolfson Economics Prize garden city competition winners (Policy Exchange, 2014). The Wolfson Economics Prize is selected because of its garden cities interest and as a contemporary project happening at the same time that this thesis was in its early stage.

The process will also allow the researcher to develop and improve her interview skills before conducting the main case studies. Having presented the main ideas (Chapter 2) that relate to this research, the pilot study will explore the state of the art in a practice-based approach. The main goals for this phase are to evaluate the concepts and to investigate the variations among the experts and the public, justifying the need to consider landscape sustainability and sense of place in a different way. The pilot study provides the opportunity to explore different approaches and collect evidence that will inform the way in which future research will unfold. To put it in the same words as the overall strategy of this research; the ‘identification’ of the ideas acknowledges some of

these ideas, their interpretation, complexity and use in landscape design, in order to make sure that the phases of ‘socialisation’ and ‘implementation’ will run smoothly.

3.2.1 Garden cities and the Wolfson economics prize competition

It is becoming as difficult to ignore the spatial and visual impacts of infrastructure projects, as they become larger in scale, as it is to ignore the effects of climate change on society and the landscape. The project selected as the pilot study is the Wolfson Economics Prize Competition 2014, focusing on garden cities, and it covers the ‘identification’ phase of the research (§3.2). This is considered significant as it will give the opportunity to the researcher to explore concepts relate to sustainability and spatial quality, as part of the drawing analysis stage that has been planned (§3.2.1.1). Low carbon and design elements form an exploratory experience and strengthen the concept of the research. The investigation of the concepts of low carbon and quality of space through drawings, will provide experience for the methodological stages that follow.

The Wolfson Economics Prize was not limited by the ‘social city’ idea of the garden city introduced by Ebenezer Howard (Howard, 1902), but it aimed to find an innovative way to build communities that will truly provide for and support their residents. The brief of the competition clearly states that entrants should develop their ideas about how to design a new garden city, and explain their vision for an economically viable, popular and future-proofed garden city (Policy Exchange, 2014). The competition deals with a current problem for the UK; the provision of sustainable housing and low carbon lifestyle (Policy Exchange, 2014). It is considered a good way to examine contemporary ideas related to the quality of space and sustainable urban strategies, and explore whether and how the designers have integrated these ideas in their proposals. In addition, the timing of this competition is important as the final results were

announced a few months after the beginning of the research (2014) and therefore were an extremely high-profile exemplar of contemporary landscape-scale thinking in the UK. The investigation of how the designers, who will be called on to build such garden city schemes in reality, think, act and design in relation to such concepts is certainly relevant to this research. Considering the diversity of interpretation of these ideas, the researcher will examine these concepts to identify the ideas behind the various masterplans and the language used. Evidence of spatial quality, low carbon and design will be investigated in the context of a holistic landscape development rather than single-sided or disciplinary definitions.

Using an economics prize aiming to address the lack of housing in the UK, this pilot study will examine how sustainable ideas can be integrated into the design proposition and the ways in which this can change our understanding of the landscape and the interpretation of spatial quality at inner city. Knowing the requirements of the competition brief and selecting three of the finalists' submissions of Wolfson Economics Prize (Garden City competition), it will explore the way that contemporary designers and professional bodies deal with urban and regional schemes. The investigation of the visual representations will highlight the importance of drawings in decision making and project process, validating or not the decision of the author to include it in the research questions.

The submitted documents and designs will be used during this initial part of the pilot study. The analysis consists of a thorough examination of the proposals, investigating both the essays and pictorial forms presented. The three projects out of five selected for this research are all finalists of the garden city competition. Three practices are selected based on their ranking by the competition judges (winner, runner up, and finalist). They are named as Uxcester – URBED (winner), Stoke Harbour – Shelter & PRP (runner up)

and Be A Pioneer – Barton Willmore (finalist). An initial explanation of the concept, an analysis of the final submission (text and drawings), interviews with the designers and a drawing exhibition will apply to all the three selected schemes where the preliminary outcomes will be presented. The two remaining finalists have not been examined in depth partly because of the nature of the competition entries being less suited to the aims of the research and partly because of time constraints. As the pilot study establishes the conceptual base of the research it is felt that the schemes from the three finalists will provide enough information helping the researcher to shape the main body of the study.

3.2.1.1 Drawing and proposal (essay) analysis

Following the examination of the design proposal of each scheme, an in-depth exploration of the final submitted designs will be the second stage of data collection. A proposal and drawing analysis will be conducted, aiming to unpack information that has been included in the finalists' submissions. Working in parallel with the submissions' essays and the drawings, the main goal will be to explore how 'landscape sustainability' and 'spatial quality' are interpreted in urban and regional design, and what the differences between textual and pictorial forms are. The analysis applying tracing methods (tracing and drawing techniques) to the main design elements (water, open space, neighbourhoods, transport and more) and also a detailed investigation of the 25.000-word essays, submitted by the finalists, will describe the proposed masterplans. Current literature has helped the author to improve her knowledge on the diversity of these concepts and the various examples regarding their spatial interpretation. However, a real-time investigation, based on a drawing analysis by the researcher, will reveal how the contemporary landscape architects and designers are

dealing with similar challenges. A proposal analysis will identify how many times these terms have been used in the document (Fig.8), and if this results in significant differences on the master plans submitted by the finalists. This brief examination will reveal common areas between the language chosen to describe the designs and the drawings/masterplans. The word count phase will simply look how ideas are being expressed and what words often used to express ideas. Subsequently, observations will be made regarding the visual representation on the garden city proposals based on these preliminary outcomes.

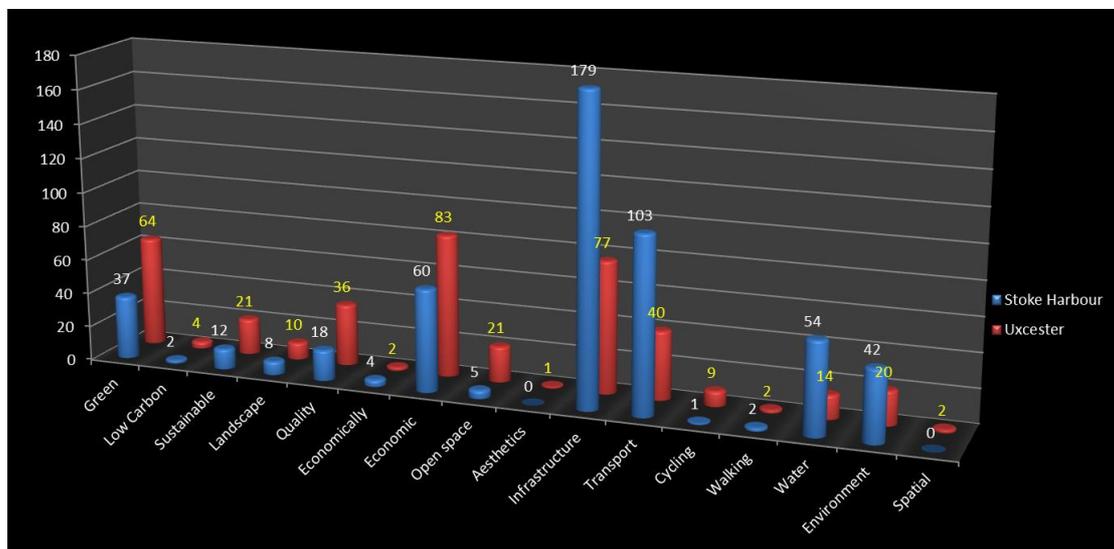


Figure 8: Example of the ‘proposal’ analysis between text and drawings of two schemes, the Stoke Harbour (Shelter & PRP Architects) and Uxcester (URBED).

Exploring these concepts as well as examining the submitted competition master plans and diagrams, the researcher will conduct a drawing analysis aiming to unpack the information embedded in the pictorial forms. For the purpose of this research, these drawings will be called ‘analytical drawings’ (Fig.9 & 10). Multiple analytical drawings (Appendix 1) will be created unpacking critical information and showing how each design team has dealt with the brief as well as embedding low carbon in spatial terms. Further investigation of the low carbon and spatial quality concepts will be

conducted with the help of both the graphic/visual submissions and the information included in the finalists' documents. Dealing in parallel with the competition proposals (essays) and their graphical communication the researcher will create categories related to sustainability and spatial quality in the landscape context where the drawings would possibly fit in. Themes that are expected to emerge from the initial analysis are 'current infrastructure', 'water strategy', 'green analysis', 'transport', 'energy', 'neighbourhoods', and 'housing strategy'.

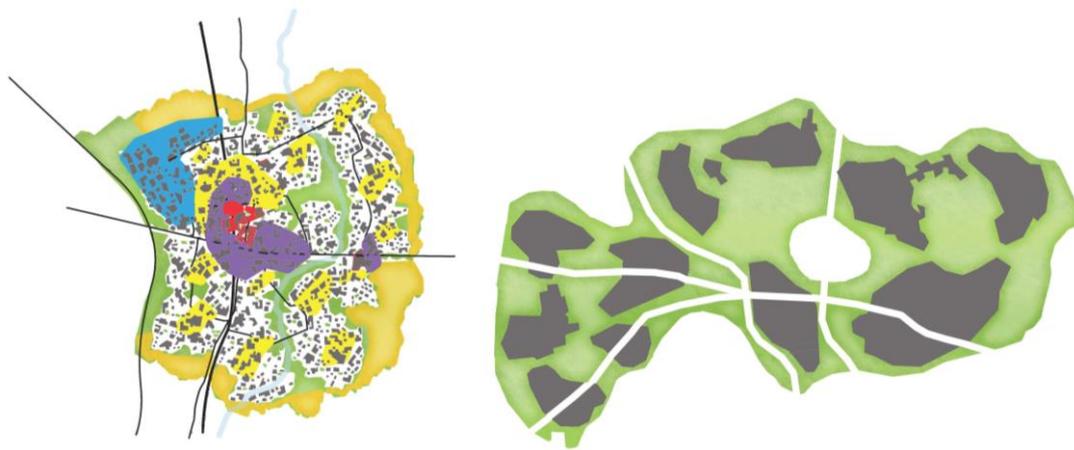


Figure 9: Examples of analytical drawings developed by the researcher showing the agriculture and housing areas (left) and the green infrastructure (right) of the 'Be A Pioneer' submission by Barton Willmore. The aim of these drawings was to elicit responses by the exhibition visitors. There is no key to the drawings because that could otherwise act as a prompt.

The drawing analysis aims to improve the understanding and interpretation of the design ideas emerging through the competition. Especially for concepts such as low carbon and spatial quality, it could bring to light alternative ways of visual representation in landscape strategies. Moreover, the drawing analysis is believed to be a useful tool for the comparison of the three final projects, revealing the designers' graphic styles and exposing the real landscape characteristics for each project. The drawings analysis will use both the essay proposals submitted by the finalists and their masterplan/drawings. The researcher will work on the drawing analysis in parallel to the essay examination, identifying key characteristics of the schemes (eg. water,

transport, green infrastructure) and tracing them individually from the final masterplan. A retrospective method moving from the final masterplan to the individual elements of the design is used. These are then represented in new drawings by the researcher. The same process and style of drawings will be used for all the finalists even though some elements can be less visible or not represented in some of the proposals (eg. food production).

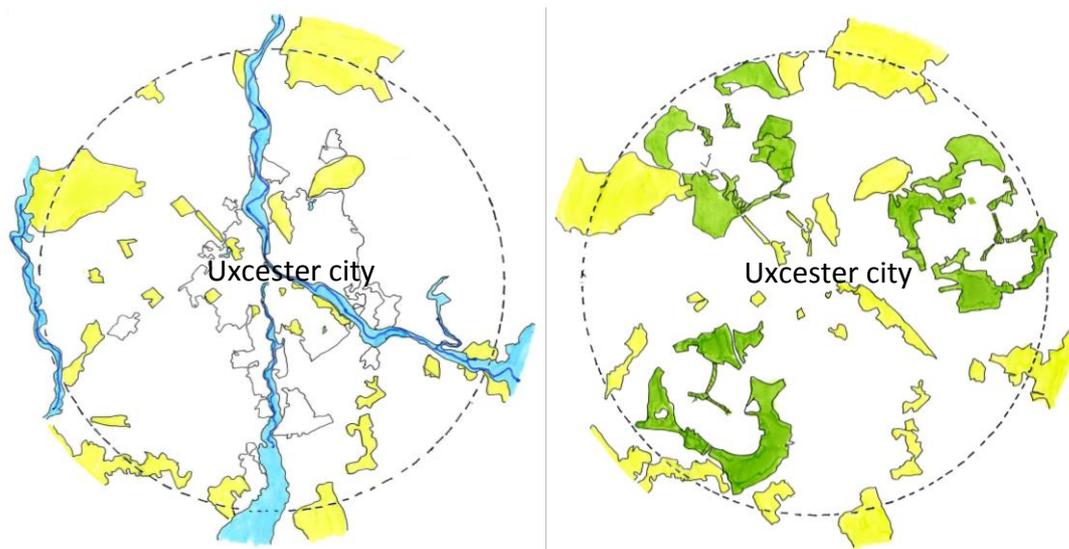


Figure 10: Examples of analytical drawings created by the researcher showing the current infrastructure (left) and the proposed green strategy (right) of the ‘Uxchester’ submission by URBED. The aim of these drawings was to elicit responses by the exhibition visitors. There is no key to the drawings because that could otherwise act as a prompt.

3.2.2 Interviews

A number of interviews will be conducted during the pilot study. The interviews are classified in two groups; A) interviewing the designers of the winning schemes and B) interviewing experts in the field of landscape sustainability and landscape design, who are not familiar with the competition designs. The interviews will have a double role. Firstly, they will examine how the landscape ideas have been defined and interpreted by the experts, linking with the ‘identification’ concept (§3.2). Secondly, they will test the effectiveness of the planned questions as well as improving the skills and

confidence of the researcher in order to make sure that the interviews planned for the main case studies will run smoothly. All the interviews will be conducted in English.

3.2.2.1 Interviews with the designers

This stage will explore how the low carbon concept is approached by the designers and their response to the researcher's analytical drawings (Fig.9 & 10). It will be helpful to discover if the drawings produced by the researcher will be effective, unpacking information and key elements of a landscape design. The researcher will conduct extended semi-structured interviews with four of the experts responsible for design decisions in the final schemes (see example questions Appendix 16). Discussion about their schemes and design concepts based on details revealed by the drawing analysis will explore the extent to which concepts of low carbon and spatial quality are currently being considered in landscape developments. The four professionals who have been selected to participate in this phase (Table 1), were highly involved in the final submissions and therefore their knowledge of the concept of the project as well as their expertise (in some cases) in design were two of the main reasons for their selection as interviewees. Their directorship (three of them) is also considered important, as they were responsible for most of the final decisions and propositions made at the final submission schemes.

The interviews will be audio recorded, with the prior informed consent of the interviewees (Appendix 16), supplemented by note-taking. Moreover, it will also be an opportunity to practice for difficulties which may arise during the main interviews. Each participant will be interviewed individually and they will be asked questions both about their previous expertise relating to the research topics (low carbon, sustainability, spatial quality) as well as the Wolfson competition submission by their practice. The

interviewees will thus have the flexibility to present their ideas about the competition submission and its relationship to sustainable landscape design.

Table 1: Interview Participants – Designers – Pilot study

Name	Practice/Company	Role
Pete Jefferys	Shelter	Senior Policy Officer at the housing and homelessness charity Shelter
Chris Wilford	PRP Architects	Associate Director of PRP (at the time of interview)
David Rudlin	URBED	Director of URBED
James Gross	Barton Willmore	Masterplanning Director of BW

The interviews will have the following structure: introduction to the research questions, explanation of the process to the interviewee (aims and focus of the research), signature of consent form and main body of interview. The first phase will cover the theoretical context of sustainability, where the designers will be asked about their interpretation of low carbon and the possibility of integrating such ideas to landscape regional design. During the second stage, discussion of the competition projects has been planned. The designers will be encouraged to draw or sketch to express or illustrate their ideas. The questions about visual and conceptual interpretation will also be discussed at this stage of the research, evaluating if drawings are important for the designers and how this impacts on the project.

The series of analytical drawings (Appendix 1) created by the researcher will be introduced during the second phase of the interview. The drawings will be presented to the interviewees in order to capture their response and find out if they think that their ideas have been clearly expressed in these series of drawings. Consequently, a discussion between the researcher and the interviewee will evolve, examining how key ideas can be visually expressed in landscape design. Moreover, further discussion about

how low carbon and spatial quality elements have – or have not – been embedded in the master plans is considered possible.

The ‘designers’ interview’ stage will help the researcher to understand what the concepts of ‘low carbon’ and ‘spatial quality’ mean to the designers and whether they have taken them under consideration when designing their garden city proposal. Moreover, information regarding the visualisation and the role of drawings in the landscape project process will emerge during the interviews, showing the potential of these issues in spatial strategies.

3.2.3 Drawing exhibition and interviews with experts

The final step of evaluation for the pilot study will be a drawing exhibition and the opportunity for additional interviews with experts practicing in the fields of landscape, sustainability and design. It will showcase the Wolfson Economics Prize submissions together with the preliminary findings from the drawing analysis and the data collected by the interviews with the designers.

The exhibition (Appendix 1) will present the preliminary findings in order to engage with the professionals and compile their response. The experts will examine the ideas revealed during the earlier stages of the pilot study and respond to the analytical drawings created by the researcher. It will be defined in six broad themes (Fig.11) in order to cover sustainability and spatial quality concepts in the landscape context and it aims to stimulate the experts’ way of thinking about the competition’s submissions. The six themes that will become the exhibition’s topics are: Location and Scale, Connectivity, Water, Make Green Space High Quality and Everyday, Layering the Landscape, and Food Production and will be presented on A0 boards for the period of one month in a pre-booked exhibition space.

The boards will consist of the analytical drawings, some of the original competition drawings (only as a reference) and interview material such as quotes and competition essays. The participants will be asked to explore the six themes and consider whether they relate to low carbon and quality elements either in urban or regional scale. Their spatial representation and the different drawing styles will be discussed and evaluated by the participants with the help of the researcher, in order to investigate the diversity of examples and the most effective (if any) methods to communicate complex concepts enhancing spatial understanding in strategic landscape design. Since the researcher will be seeking the response of the expert to her analytical drawings as well to the designers' work, not many key/legends or explanation tools will be given except those already existing and the designers' interviews. This will allow the interviewees to form their own decisions as to what is represented in the schemes.

Short questionnaires designed especially for the exhibition aim to capture each participant's impression (Appendix 16). Twelve face to face interviews with the professionals will be conducted in order to capture their thoughts and benefit from their experience in the fields of design, sustainability and spatial planning. The selected professionals (Table 2) are known for their expertise in many different disciplines such as designers, engineers, sustainability experts and policy makers and have responded to a call aimed at high level experts of the UK. The interviews will be conducted in the exhibition space, giving the professionals the opportunity to refer to visual material during the interviews, and they will also be audio recorded with permission by the interviewees. Note-taking will supplement the audio recording. The records and notes will be beneficial for the researcher and will ensure better outcomes of the research.

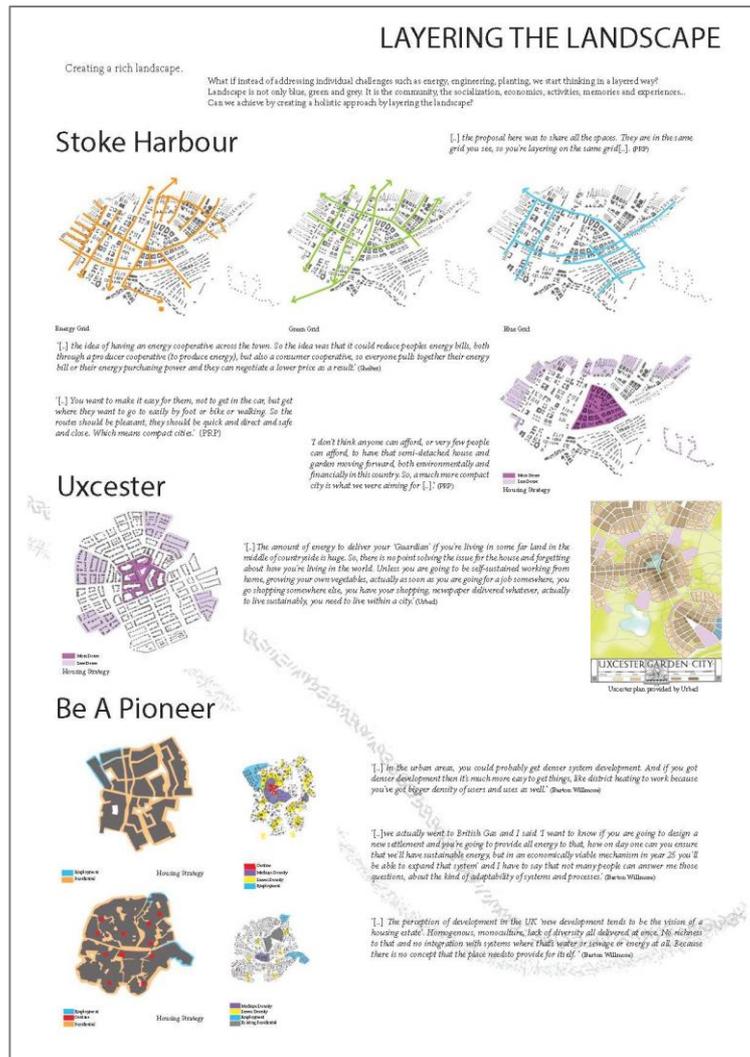


Figure 11: Example of exhibition poster from the theme ‘Layering the Landscape’, produced by the researcher for the conduction of the final part of the pilot study, the drawing exhibition. For full exhibition material see Appendix 1.

The exhibition’s interviewees have not participated in the design process of any of the competition schemes. This is important as the main landscape ideas and key elements of the garden city proposals will be evaluated based on the understanding emerging from the drawings and the text/quotes. Therefore an additional test for the drawing analysis, showing preliminary results on the effectiveness of the drawings, will investigate if it is beneficial to the better understanding of the concepts. Would it be possible for the professionals to understand the core ideas by the final master plans and how would the analytical drawings help towards this goal? Will the analytical drawings

help the experts to perceive the designers' message? Based on these questions, the exhibition will produce significant data developing the overall concept of this research and helping the author to plan future steps of the methodology. Even though the main data collection is focused on the three main case studies, it is possible for the pilot study to produce important observations (§3.6) that will help in the future stages of the research.

Table 2: Interview participants for the exhibition – Experts – Pilot Study

Name	Profession	Position & Company
Ben Gray	Asset manager and land agent (agriculture)	Packington Estate Enterprises Limited
Nicholas Barlow	Land Surveyor	Barlow Associates/ Packington Estate Enterprises Limited
Katherine Fuller	Business and Economics	Senior Project Manager at Climate-KIC
David Tittle	Urban Designer	Director at MADE
Kate Martin	Destination Planning	Programme Manager at Climate-KIC
Ken Harrison	Urban Designer/ Town and Country Planner	Head of policy and spatial planning at Solihull MBC
Simon Watkins	Landscape Architect	Director at Watkins Design Associates
Steve Fancourt	Landscape Architect	Arup
Harriet Devlin	Conservation of the Historic Environment	Birmingham City University
Chris Parry	Ecologist	Principal ecologist at Birmingham & Black Country Wildlife trust
Jack Wilson	Engineer & Environmental Planning	Chair of the Wildlife Trust Director of Land Care Associates
Dave Green	Energy Assessor & Green Deal Advisor	Director Dave Green Energy Services

3.2.4 How the pilot study will help the formation of further research

On a conceptual basis, the ‘identification of the ideas’ phase aims to ensure that the researcher has a deeper understanding of the concept in order to support the research related to ‘socialisation’ and ‘implementation’ and will validate the argument and research questions in order to make sure that the main research will run smoothly without conceptual gaps. In simple terms, it will be the foundation of the main methodological phase, providing some preliminary data that will form the way in which the main case studies will develop. It could reveal indications related to the research questions, for example whether low carbon is interpreted in its ‘full potential’ or if sustainability and spatial quality are able to perform visually.

In addition, the pilot study will improve the analytical skills of the author to the point which she will be more confident to identify the key elements of a design or master plan without going through the full process of drawing analysis. This is a major advantage, as the researcher will need to review drawings and designs in a short amount of time during the upcoming case studies (§3.3 & 3.4). The opportunity to find effective ways of communication and familiarity with different ways of design interpretation (because of the wide range of interviewees and the broad representation of the design schemes in Europe and the UK), will help with time management.

3.3 Socialization of landscape ideas. Monitoring the landscape model (Landscape Observatory)

The main body of the research will start with the ‘Socialization’ phase, monitoring a landscape model developed by the Landscape Observatory of Catalonia. The rationale of the ‘socialization’ case study can be interpreted as the familiarity and acceptance of

the landscape ideas in a regional and individual level and the awareness raised of the value of landscape. Using research methods such as field visits, interviews and observations in pioneer landscape projects, the researcher will examine how key quality elements and landscape ideas are disseminated but also communicated to the broader audience and with what impact to the landscape and the region. This case study will examine the way in which a holistic landscape approach has been adopted into regional planning framework and landscape policies, and how this affects political decisions and individual views regarding landscape developments.

As this research examines the extent to which key qualities are delivered in landscape spatial strategies, it is believed that the socialization and communication of these ideas play a crucial role in the acceptance and understanding from the audience –this is either at a governmental or at a public level– raising awareness and therefore affecting the implementation and delivery of the project. The case of the Landscape Observatory will be the main exploratory tool for this stage based on the expertise in monitoring the landscape model.

The areas that will be covered will be:

- Landscape Observatory; Background and Function
- Placement in Catalonia
- Interviews with experts
- Data Collection

3.3.1 Landscape Observatory; background and function

The Landscape Observatory of Catalonia (Spain) is an advisory body on landscape issues for the government of Catalonia and the Catalan society. Originally established to implement the European Landscape Convention (ELC)⁵, it has succeeded in bringing attention to the ‘land’ and creating a landscape-oriented culture.

The main reasons for its selection as a case study for this research are the global recognition that it has managed to generate and the pioneer projects developed following the ELC. Its relatively fast growth, formed on November 2004, with rapid results and an impressive impact on the Catalan society, are vitally important for the research. The need of studying the landscape and also ‘sensitising’ the Catalan society were fundamental reasons for its creation. The Landscape Observatory works in a framework of sustainable development, increasing knowledge of the landscape and monitoring the landscape changes. It is organised as a consortium and it is included in the Act for Protection, Management and Planning of the landscape in Catalonia (Observatori del Paisatge, 2015).

Using the Observatory as a model and spending time in the geographical location where it is based – Catalonia – will make it possible to identify how it was established and the reasons why it has been so successful. Some of the Observatory’s main activities are: monitoring the evolution of the landscape, identifying ways that a landscape site can be embedded in policy and legal documents and looking at a different way of spatial planning. By examining and working on these activities as well as interacting with the team of the Landscape Observatory, makes it possible to gain knowledge of how this

⁵ As stated by the Council of Europe, the aims of the European Landscape Convention are to promote landscape protection, management and planning, and to organise European cooperation on landscape issues. This Convention applies to the entire territory of the parties and covers natural, rural, urban and peri-urban areas. It includes land, inland water and marine areas. It concerns landscapes that might be considered outstanding as well as every day or degraded landscapes.

model works and if it is implemented elsewhere in Europe and internationally. The main scope of work will be to reveal the ways that the Landscape Observatory has managed to 'sensitise' the society, how this affects the land and what the impact on the territory and the region is. Further investigation will include the various tools developed by the Landscape Observatory (landscape catalogues, landscape charters, press releases) and the methods followed to change perceptions of the Catalan landscape, developed either in a visual or textual form.

3.3.2 Placement in Catalonia

The investigation of the structure of work of the Landscape Observatory as well as the reasons why it has been so successful (included in the 'Landscape Award Alliance of the Council of Europe - <https://rm.coe.int/16802f2998>), will be the main concern of the placement taken place at the headquarters of the Landscape Observatory in Catalonia (§3.3 & 3.3.1). For this placement, a one month period has been allocated in the second year of the study, following the pilot study and the drawing exhibition (§3.2). The main activities of the placement will consist of:

- A. work at the headquarters of the Landscape Observatory in Olot,
- B. visits to landscape projects around the region and
- C. interviews with experts of the territory.

The researcher is planning to work closely to the Observatory coordinator (Pere Sala i Marti) and other members of staff with the aim of investigating the process of setting up the institution. Being based at the Observatory in Olot aligns with the requirements from the Climate-KIC sponsorship and will give the researcher the opportunity to meet decision makers of the region. An interview with the coordinator has been arranged for

the beginning of the placement in order for the researcher to gain a view on the inside, the background, the structure and the current situation of the institution.

During the allocated time at the headquarters of the Observatory the functions such as the way it establishes mechanisms for observations of the landscape, the objectives of landscape quality criteria, the way to adopt measures of protection, as well as landscape planning management methods will be examined. Being at the site location and having access to all the documents and personnel of the Observatory, will improve the understanding about where the Observatory ‘stands’ for the region as well as how it has managed to achieve its goals. An examination of the main outcomes of the Observatory, such as the Landscape Catalogues, the Landscape Charters and technical material is considered important in order to improve understanding of how these initiatives have led to engagement of the landscape ideas by the Catalan society. The landscape catalogues are instruments for the introduction of landscape objectives into spatial planning and the landscape charters are voluntary instruments aimed at promoting actions and strategies for landscape assessment and further improvement.

Monitoring Catalonia’s landscape development will be a theoretical investigation, and enable visits to landscape projects that the Observatory oversees. During the time spent at the headquarters, it will be possible to identify the most relevant landscape initiatives for this research, examining maps, visual material and technical documents that have helped at the establishment of the projects and investigate the expression and communication of the landscape characteristics. Interviews with their designers and administration correspondents will also take place. Landscape projects that are selected because of their unique landscape character and relevance to the research’s questions are the Landscape Charter of Priorat, the Landscape Charter of Lluçanès and the

landscape plans of Cervera and La Cerdanya. These projects will be evaluated during the placement in Catalonia and interviews with the experts will be scheduled.

The aim will be to find examples where landscape elements are integrated in landscape planning and understand how they are disseminated to the society, how this region has transformed itself over the last few decades and the way the society perceives the land and the city. Some of the places that have been suggested for observation (with the help of the Observatory Coordinator Pere Sala), in order to understand how the landscape is integrated with the city and the region are:

- City of Barcelona and the territory, sense of place and sustainability
- Barcelona waterfront, the development and the impact on the landscape and the society
- Sants Montjuic & Montjuic Hill, skyline and the implementation of landscape ideas leading to an interesting place (Fig.12)
- Turo del Carmel, planning characteristics, skyline and uniqueness of place (Fig.13)
- Park Guell and Park de la Ciutadella, open spaces and sustainability in the urban environment

These areas will be used to examine how perceptions about the landscape have changed what is the response from the society. These observations form additional data collection, supplementing the main research related to the Observatory and regional projects, taking full advantage of the location of this case study.



Figure 12: View of Barcelona from Sants Montjuic. One of the green areas of the city, Montjuic hill, consists of a green oasis, museums and small parks at the edge of the city of Barcelona (Author's photograph).



Figure 13: Barcelona skyline. Image taken from Turo del Carmel revealing the skyline and planning characteristics of the city (Author's photograph).

3.3.3 Interviews with experts

Face to face interviews will be scheduled during the placement of Catalonia engaging with high profile experts of the region who have been involved in the transition of the regional landscape the recent years. The aim of the interviews is to investigate the key elements of raising the profile of landscape, the process and engagement with local communities. The interviews will establish the way the process of landscape design and planning has changed the last years and how this has impacted on the society and the region. The interviewees selected for this case study represent a wide range of professionals in different positions and institutions of Catalonia (Table 3). They belong to various disciplines and have worked with the concepts of sustainability and landscape quality dealing with landscape awareness.

Table 3: Interview participants during the placement in Catalonia

Name	Position & Institution
Pere Sala i Martí	Coordinator of the Landscape Observatory in Catalonia
Carles Castells	Head of the Land Planning and Analysis Office of Catalonia/ Cap de l'Oficina Tècnica de Planificació i Anàlisi Territorial
Ferran Miralles Sabatell	General Director for Environmental Policies & former Head of Strategic Actions, Directorate General of Land and Planning, Department of Territory and Sustainability
Josep Maria Carrera	Metropolitan Region of Barcelona
Irene Navarro Solé	Environmentalism/LandArch in Landscape Plan La Cerdanya
Laura Megias	Consortium of Landscape Charter Lluçanès
Xavier Sabaté Rotés	Advisor at Landscape Charter Lluçanès
Salvador Rueda	Director of the Agencia de Ecologia Urbana de Barcelona
Xavier Peris	Lawyer – member Landscape Charter Priorat
Joan Vaqué	Founding member of Candidature Landscape Charter Priorat

The interviews will be conducted based on semi-structured questionnaires to direct the interviewees to the research's questions, and give room to express their own opinion. The language used will be English and they will take place either at the projects' locations –if possible– or in pre-agreed meeting locations. It is likely that most interviews will be conducted in the city and the surroundings of Barcelona. Audio recording and supplementing note taking methods will be used with the prior informed consent of the interviewees (Appendix 16). Regional maps of the area will be used if better understanding of the region is required. Most of the interviews will last between one to two hours, however those combined with field visits will take longer as some time will be allocated to the exploration of the landscape of each specific project. As the projects examined are in public domain the interviewees will be asked if they are willing to be named, when their quotes are used in the thesis.

3.3.4 Data collection

The data collection for this case study will be split in four main areas, and will consist of documents, maps, visual material, technical documents, case study notes, drawings, images, interview transcripts and recordings, note taking material as well as notes from observations and discussions. The data will be recorded in note form, digital recording, drawings, maps and photographs.

The main areas of the data will be divided into:

1. The Landscape Observatory technical documents, maps and policy frameworks
2. Data collected from the field visits and project visits – images, maps, dissemination material, documents and observations
3. Data collected during the interviews – audio recordings, word by word transcripts, and observations and
4. Data collected during the observation of the landscape of Catalonia – observations and images

Data focusing on the background of the Landscape Observatory and the landscape projects will be collected in advance in preparation for the case study. The main volume of data will be gathered during the one-month placement in Catalonia. The researcher will be responsible for the collection of data without the help of any research assistants, however the members of the Landscape Observatory will reveal significant locations and projects.

An introduction to this research, explanation of the interview process and structure, signing of consent form and main body of the discussion will form the main structure of the interview. In cases where the interview is conducted at the field, the discussion might be interrupted by observations about the landscape. Relevant material collected

such as maps, drawings and documents will be brought back to the UK or photocopied on site. Digital data such as audio recordings and images will be encrypted, stored and brought back to the UK. The researcher's observations will be written in notes or drawings, and also brought back to the researcher's base.

3.4 Implementation. Unpacking the mechanism of how this has been done & exploring the impact to the region

The second stage of the research relates to the implementation of landscape scale projects and it will be divided into two case studies. The implementation phase focuses on investigating the extent to which these elements can be embedded on real landscape projects and the processes involved. The case studies will identify the challenges faced in practice and the extent to which effective implementation affects the final project.

The first case study will look into completed or advanced landscape projects examining the implementation of two national landscape programmes of the Dutch landscape; the 'Room for the River – Ruimte voor der Rivier' and the 'New Dutch Waterline – Hollandse Waterlinie'. The second case study of this phase will be based on 'HS2 & HS2LV' focusing on a specific landscape project and exploring the impact to the region. High Speed 2 (HS2) is a railway project from London to Birmingham (Phase 1), while High Speed 2 Landscape Vision (HS2LV) is a research proposal developed at Birmingham City University (BCU) which offers an alternative to the railway's delivery. The case study will examine the initial stages of the implementation and how certain steps at the beginning of the process can change the way a region is perceived or conceptualised.

The research methods that will be used in these case studies will include field visits, interviews, observations and drawing examination. The projects that have been chosen

for the implementation phase of this research study are considered to suit perfectly to the aims of the methodology and they will be presented below. The areas that will be covered on this section are:

Phase 3.4A: **Netherlands** a pioneer landscape focused case study

- Room for the River & New Dutch Waterline how do they fit to the concept of methodology (§3.1b)
- Placement in the Netherlands (Field visits)
- Interviews with experts
- Data Collection

Phase 3.4B: **HS2 & HS2LV**

- Introduction, how does the case study fit to the concept of methodology (§3.1b)
- Placement in the UK
- Interviews
- Data Collection

3.4A Netherlands; a pioneer landscape focused case study

The focus on this point will be to investigate the operations and climate change aspects of the large landscape strategies that belong to the framework of sustainable development. The ‘Room for the River’ and the ‘New Dutch Waterline’ are two pioneer national scale projects of the Netherlands dealing with climate change, hydrological efficiency, the rise of water levels and quality of space. They will be examined to reveal effective ways of sustainable implementation in relation to the delivery of a quality space.

3.4A.1 Room for the River & New Dutch Waterline

The 'Room for the River' is an excellent illustration of climate driven regional landscape design, implemented to address alleviate the problem of serious flooding now and in the future in the Netherlands, due to increased rainfall and rising sea levels. It is a national programme, aiming to achieve high water level protection in 34 locations across the Netherlands, having a holistic approach about climate issues and sustainability that put landscape at the core of development considering the quality of life as well. Aiming to improve the overall environmental quality in the river region and having developed a method for the designs to be assessed, this project is also a good example of low carbon concept in spatial strategies. The serious flooding that hit the Netherlands back in 1993 and 1995 was the trigger for a change in the planning and management of the river catchment areas, resulting to the development of the Room for the River programme.

The uniqueness of a landscape adaptation programme considering water safety at a large scale but also dealing with spatial quality and long-term sustainability makes an excellent case study for the purposes of this research because it aims to be completed by the end of 2015/early 2016. The timing of the programme is important as the researcher will be able to visit completed landscape projects and unpack the process of its implementation. The main goals during this case study is to reveal specific actions and methods that have helped deliver low carbon and sustainable spaces, and ways to integrate landscape quality to a strategic scheme. The 'Room for the River' is planned to be the main project of the case study as addresses the implementation of new built adaptation landscape projects, however an examination of a second scheme that aims more on the preservation of landscape has also been outlined.

The 'New Dutch Waterline' is a national landscape programme consisting of

approximately 60 different fortresses⁶ across the Netherlands. It has been included at the methodology as complimentary to the ‘Room for the River’ programme due to the fact that is focusing on the preservation and revitalisation of the landscape infrastructure aiming for sustainability and quality of space. The New Dutch Waterline is a large-scale scheme, originally designed in the 19th century as a military defence system able to enable controlled inundation through sophisticated landscape engineering. The scheme was never used for the reasons it was originally created, leaving a historical and cultural landscape in the need of revitalisation. The ‘New Dutch Waterline’ was aiming to create new values for a series of existing forts of the Dutch landscape, across the country. The original design of the individual forts that enabled them to be inundated for strategic reasons was a challenge that should be thought through and integrated to the design and the new uses. The goal of this large-scale scheme was to preserve and revitalise the existing fortresses aiming to spatial quality, water safety, visibility and accessibility of the landscape. The successful implementation of the programme together with the emphasis on sustainability and landscape quality has resulted to improvement of the existing historical landscape, creating valuable public space, adding a unique identity to the landscape and leading to a nomination as a tentative UNESCO site. The focus on landscape revitalisation based on spatial quality and low carbon is believed to be a good way to identify implementation processes both in new and existing large scale projects. In addition, the idea of creating an identity for the landscape, that embraces history and provides contemporary space, relates to the research questions looking at the way landscape projects impact on the region. The plan of work for this second programme is to make observations on how implementation

⁶ A line of fortified buildings conceived in the 17th century and extended by the Dutch during the 20th century aiming to oppose invaders by using inundation techniques.

methods, based on spatial quality and sustainability, have revitalised the area resulting to landscape value and identity of place. As this is a completed project the researcher will have the opportunity to visit a number of fortresses and their surroundings observing their use, acceptance and engagement to the daily life of the society.

3.4A.2 Placement in the Netherlands (field visits)

The placement will follow the case study at the Landscape Observatory aiming to a continuous flow from the concepts of ‘socialization’ to ‘implementation’. Over a period of one month the researcher will be hosted by the University of Delft and will participate in the landscape programmes of the ‘Room for the River’ and the ‘New Dutch Waterline’. The researcher will be able to use the resources from the Technical University of Delft, however the main research will consist of visits to landscape projects from both programmes (Room for the River and New Dutch Waterline) offering the opportunity to work at and observe some of the project developments as well as interview designers and experts involved throughout the schemes. An interview with one of the main figures during the establishment of both programmes, Professor Dirk Sijmons, is scheduled for the beginning of the placement, to give an overview about the development and implementation of these strategic schemes. The introductory meeting with Professor Sijmons, who will be the host of the research placement, will identify the best projects to visit and suggest experts that will bring value as interview participants.

The interviews will seek to understand the rationale for the projects and identify what role spatial quality, low carbon and sustainability playing for the development. The role of visual communication will be investigated and questioned during the field visits and the interviews. Being at the physical location of the projects is considered very

important as the researcher will be able to observe, feel and see the landscape character developed by these schemes while the same time meeting the experts involved in their design. Initially, the researcher will focus on genesis of the projects and the rationale to ensure spatial quality and landscape sustainability plays a key role. Subsequently, visits to selected landscape projects will be scheduled and will be combined with interviews on site.

The ‘Room for the River’ and the ‘New Dutch Waterline’ are national scale programmes and therefore specific and thoroughly planned meetings should be organised in advanced. During the visits on the landscape projects observations will be made, plans and maps collected of the area, pictures taken and experts interviewed. The field visits will be discussed with Dirk Sijmons prior to the placement. Both rural and urban projects with a unique landscape character have been proposed for examination for the ‘Room for the River’ programme. The field visits will provide the opportunity to understand the topography and character of the place and evaluate the quality of the landscape project. Processes followed and concepts developed by the designers and the institutions to find out how quality elements are delivered in landscape strategies and how these elements transfer from the conceptual to the implementation stage. Maps, documents and visuals will be collected during the field visit. After discussing with the placement’s host, the locations selected for an in-depth investigation of the ‘Room for the River’ programme are (Table 4):

Table 4: Field visits locations for the Room for the River programme

Project Location	Type of landscape	Type of work
Culemborgerwaard	Peri-urban	Strengthening dykes
Lent/Nijmegen	Urban	Relocation of dykes
Noordwaard	Rural	Depoldering
Munnikenland	Rural	Floodplain excavation
Viannen/Lek	Urban	Strengthening dykes

At the ‘New Dutch Waterline’ field visits among different scales and types of fortresses (Table 5) will improve the understanding of ways of revitalisation of a landscape project, embedding key qualities and creating a unique identity. A broad range of fortresses will be visited and observed by the researcher in order to understand how change to the implementation and use of space can create a substantial landscape character. The real-time observation and analysis of the landscape projects will often combine with onsite interviews with the experts. The underline concept of the interviews is presented below.

Table 5: Field visits locations for the New Dutch Waterline programme

Fort Name	Revitalisation Project
Week aan het Spoel	Historical Monument & Amphitheatre/Leisure
Kanonkazemat Diefdijk	Historical Monument
Doorgezaagde Bunker 599	Historical Monument, Viewpoint / Events
Fort bij Vechten Waterliniemuseum	Museum of water/ Events & Leisure
Fort bij Rijnauwen	Natural Resource & Memorial / Excursions
Slot Loevenstein	Historical Monument/Leisure & Attractions
Fort aan de Klop	Festivities and conferences / Events
Fort De Gagel	Natural resource & Public Park
Fort op de Ruigenhoeksedijk	Monument/Guided tours, cycling & hiking tracks
Fort Blauwkapel	Public recreation area/Leisure
Fort Voordorp	Festivities / Events
Winfort Jutphaas	Festivities and conferences / Events & Workshops

3.4A.3 Interviews with experts

Considering how a large-scale scheme has been conceived and delivered, the structure, communication and collaboration between the different parties is important to set a wide interviewee group coming from different roles and positions. Face to face interviews with experts, project managers and technicians have been planned for this

case study. The interview questions will focus on how landscape qualities are embedded in strategic schemes, the process followed, the impact on the landscape character, and the role of drawings in landscape design and planning. The interviewees are divided into two groups (Table 6), the first based on experts who coordinated the projects on the strategic level and the second consisted of experts who have worked on the definite outline of the project. That way, the researcher will be able to understand the processes on the organisational and administration level of the schemes as well as the plan of work and policies on the regional and local scale.

Table 6: Interviewees for the Netherlands case study

Name	Position	Group
Bart de Zwart	Urban & Regional Researcher	Involvement on general level
Dirk Sijmons	State Advisor/LandArch	Involvement on general level
Annemiek Tromp	Programme manager Rijkswaterstaat	Involvement on general level
Jeroen de Vries	Landscape Architect Larenstein	Involvement on general level
Jan van der Grift	Senior Advisor for Spatial and Environmental Quality	Involvement on general level
Niek Hazendonk	Senior Policy Officer	Specific location Culemborg
Mathieu Schouten	Landscape Architect	Specific location Lent/Nijmegen
Annika Hesselink	Technical Manager	Specific location Noordward

The interviews will be based on semi-structured questionnaires and will last from one to two hours. Interviews that will take place during the field visits might last longer as they will be combined with observations and comments on the actual scheme. The interviewees are experienced professionals and with significant knowledge of the examined projects and therefore the semi-structured interviews are considered the best option as they will direct the interviewees to the research's framework, but also give them room to express their opinion. As the projects examined are in the public domain

the interviewees will be asked if they are willing to be named, when their quotes are used in the thesis. Audio recording and supplementing note taking methods will be adopted with the prior informed consent of the interviewees (Appendix 16). All the interviews will be conducted in English language. Since this is a national landscape project, the researcher will request maps of the whole scheme as well as regional maps and designs of the specific locations (Table 5) to help her understand the geographical characteristics of the area. For relevant material that is in Dutch, translation tools will be used with the help of the interviewees.

3.4A.4 Data collection

The data collection for this case study is based on three main areas, and they will consist of documents, maps, visual material, technical documents, case study notes, drawings, images, interview transcripts and recordings, note taking material as well as notes from observations and discussions with experts. The data will be recorded in note form, digital recording, drawings, maps and photographs.

The main areas of the data will be divided into:

1. Data collected from the field visits and project visits – images, maps, dissemination material, documents and observations,
2. Data collected during the interviews – audio recordings, word by word transcripts and researcher's notes as well as researcher's observations and
3. Data collected during the observation of the Room for the River & New Dutch Waterline projects, in locations where the researcher will not be accompanied by an expert – researcher's personal observations and images.

A small percentage of data focusing on the background of the Programmes (Room for the River & New Dutch Waterline) will be collected in advance, in preparation for the

case study. The main volume of data will be gathered during the one-month placement in the Netherlands. The placement host Professor Dirk Sijmons (TU Delft) and the members of staff of each project location are expected to advise and guide the researcher.

The format of the interviews will be as follows: research introduction, explanation of the process to the interviewee, signing of consent form and main body of interview. In cases where the interview will be conducted at the field the length will possibly vary, as discussions might be interrupted by observations about the landscape character and the project. Material such as maps, drawings and documents will be brought back to the UK and if this not possible they will be photocopied or photographed. Digital data such as audio recordings and images will be encrypted, stored and brought back to the UK. Researcher's observations will be written in notes or drawings, and brought back to the researcher's base.

3.4B: HS2 & HS2LV

High Speed 2 (HS2) is one of the largest infrastructure projects of the Midland region of the UK (Phase 1). This, together with High Speed 2 Landscape Vision (HS2LV), will be the final case study of this research. The second implementation case study aims to cover possible areas of how a landscape project is being delivered and the role of visuals in the decision making. The HS2 & HS2 Landscape Vision (HS2LV) projects are aiming to examine the implementation concept from a different angle as well as investigate ideas that will transform the region. HS2 is one of the largest traditional railway project in the UK, while HS2LV is a research project that offers an alternative to this proposal. The case study was chosen as the last methodological step of the research, because of the fact that is at the initial stage (design stage) of the project

process. The researcher decided to investigate projects that were under development (Netherlands) in order to gain knowledge and be able to extract more information from a project on the beginning phase, as is HS2 & HS2LV. Having seen how a successfully completed regional project can affect the region, it will be easier to extract information on how this can be done in a project that is currently under development.

3.4B.1 HS2 & HS2 Landscape Vision

HS2 & HS2LV are selected as vehicles for this experimentation. HS2 is a planned high-speed railway aiming to link London, Birmingham, East Midlands, Leeds, Sheffield and Manchester. It has been described as a great infrastructure project and a major engineering attempt of our times and it is proposed to be an important step towards Britain's economic development. HS2 has been discussed in the UK for the last 5 years and the first phase of the construction work is planned to begin in 2017. Based on regional design and being a project of international interest, HS2LV, a proposal developed at BCU, proposes to widen the conceptual and territorial scope of the high-speed project based on a sustainable landscape way of seeing. HS2LV aims to transform a linear engineering and technical project –such as HS2– into a comprehensive approach attracting local, regional and national interest. Using HS2 Ltd. to help build a landscape vision for the region, HS2LV is a landscape led approach that has been developed to examine how it could act as a social, economic catalyst for the region. It proposes to put the landscape at the core of development, expanding the conceptual agenda as well as the territorial scope of the engineering project with the aim to give value to the landscape and the region.

The contradiction between the plans for an engineering project and the proposal for the establishment of a 'symbiotic relationship between the landscape' (Moore, 2013b), the

project and the region has led to the selection of this to become part of the methodological structure of this research in the form of a case study. It is believed that the examination of both HS2 and HS2LV projects will demonstrate the differences on the implementation phase and how these can impact on the larger scale. The fact that both projects are in the first stage of their implementation will give the opportunity to the researcher to explore different examples of how such a strategic scheme can be delivered.

3.4B.2 Placement in the UK

A research placement at Birmingham City Council (BCC) for a month will take place at the department of Transportation and Connectivity, giving access to documents and future plans about the HS2 scheme. As Birmingham belongs to the first phase of the construction work of the railway and has been the focus on the HS2LV, Birmingham City Council is believed to be an important placement for the study providing the necessary links to the local government. The placement in the UK will mainly consist of work at Birmingham City Council, however the researcher will have the opportunity to travel to other areas related with the HS2 and HS2LV schemes, where she will conduct interviews and collect more data. The additional locations are Solihull, the Blythe and Tames Valleys and London. During the first days of the placement the researcher will use the resources of Birmingham City Council to find out the status of the HS2 scheme led by HS2 Ltd., the progress on the HS2LV proposal developed at BCU, as well as the process and implementation steps that would have been followed so far.

An introductory meeting with the host of the placement in Birmingham City Council, Assistant Director of Transportation and Connectivity (Anne Shaw) has been set for the

beginning of the placement in order to introduce the researcher to the process and help her organise the future meetings with the experts. During the allocated time at the department of Transportation and Connectivity (BCC) the researcher is planning to examine how the HS2 is developing through the local government and if the HS2LV proposal has an impact on this development or the decision makers involved. It will also be important to collect as many documents and plans as possible to understand the different conceptual and implementation ideas between the HS2 and the HS2LV. The examination of maps, drawings and visualisations will lead to a deeper understanding of the scheme highlighting the potential of a landscape led approach.

Since HS2 and HS2LV are in the design phase of their implementation, field visits will be limited, but not non-existent. Visits to the Blythe and Tame valleys as well as the areas of Solihull and Birmingham will develop an understanding of the landscape and the potential impact of the engineering project. Observations between the two different projects and interviews with the experts will reveal if there is any difference on how these projects affect the landscape and what this would mean for the region.

3.4B.3 Interviews with experts

The placement (3.4B.2) will give the opportunity to the researcher to conduct interviews with administrative staff of the HS2 as well as creative forces supporting the HS2LV proposition. Face to face interviews will help her to understand the process followed so far towards the implementation of the scheme and how this affects the final outcome of the project. The selected interviewees (Table 7) are involved in different aspects of the projects, coming from both an engineering and design background.

Based on semi-structured questionnaires the researcher will try to understand the force behind the two proposals and the vision on these projects. The experts are familiar with

the concepts of sustainability and spatial quality however, they might have different views on how these ideas are implemented on such national scale schemes. By selecting professionals who are involved in both the HS2 project, but also at the HS2 design panel (advisory body) the researcher is aiming to examine the various concepts on the implementation steps of the project and how this will affect the design and managerial process.

Table 7: Interviewees during the HS2 & HS2LV case study

Name	Position & Institution
Henk Bouwman	Advisor to the ITC (Independent Transport Commission) on the Impact on Cities of the HS2
Tony Burton	Town Planning & Environment Consultant
Anne Shaw	Assistant Director of Transportation & Connectivity - BCC
Sadie Morgan	HS2 Design Panel Chair - DRMM
Gary Woodward	Development Planning Manager - BCC
Christoph Brintrup	Landscape Design Technical Lead HS2 Ltd.
Tiago Dias	Landscape Design Advisor HS2 Ltd.
Kathryn Moore	Member of the HS2 Design Panel/Founder of HS2LV-IFLA President

The semi-structured format of the interviews will give the opportunity to the interviewees to present their opinion. The structure of the interviews will be as follows: research introduction, explanation of the process to the interviewee, signing of consent form and main body of interview. The interviews will take place in a location that will have been agreed by both parties (researcher and interviewee), will be conducted in English language and will last from one to two hours. Audio recording and supplementing note taking methods will be used with the prior informed consent of the interviewees and regional maps of the area will be used if necessary. As the projects

examined are in public domain the interviewees will be asked if they are willing to be named, when their quotes are used in the thesis.

Since the founder and lead of the HS2 Landscape Vision proposal developed in BCU is Professor Kathryn Moore, who is also a member of the HS2 Design Panel, it is considered necessary to conduct a formal interview in order to reveal all the background and ongoing developments as well as the impact HS2LV has in the initial HS2 ltd scheme. As Professor Moore is also a supervisor of this research a potential conflict of interest occurs, and the interview was carefully structured to focus on her HS2 ideas and experiences.

3.4B.4 Data collection

The data collected during the UK case study will consist of documents, technical documents, maps, and any visual material that can be found at that stage. Moreover, drawings, images, interview transcripts and recordings, as well as notes from observations and discussions will be collected. The data will be recorded in note form, digital recording, drawings and maps.

The main areas of the data will be:

1. Data collected during the placement at the Transportation and Connectivity Department (BCC) – documents, technical documents, maps & visuals and
2. Data collected during the interviews – audio recordings, word by word transcripts and researcher's notes as well as researcher's observations.

A small percentage of data focusing on the background of the HS2 & HS2LV will be collected in advance, in preparation for the case study. However, the main volume of information will be gathered during the one-month placement in the UK and the conduction of the interviews with the experts. The researcher will be the solely

responsible for the collection of the data, however the placement host Anne Shaw might give guidance and help to set some of the interviews with the experts.

Data that will not be sensitive and is possible to copy (such as maps, drawings and documents) will be stored by the researcher. Digital data such as audio recordings and images will be encrypted and stored. Researcher's observations will be written in notes or drawings and stored.

3.5 Follow up with interviewees

During the interviews the experts will be asked to confirm that they are willing to be contacted again from the researcher in case there is a need for this. It is not anticipated that interviews will be repeated, but a 'follow up' with the interviewees might be needed in some cases. At this stage, the researcher will contact the interviewees by email, phone, skype or face to face in order to confirm and verify data that might have arisen afterwards or were not discussed or clarified during the original interview. Clarifications of evidence that might have been revealed during the data analysis and will need to be validated for better support of the findings will be discussed at the follow ups.

3.6 Data analysis

The data collected during the methodological phases of this research will consist of interview transcripts, audio recordings, field notes, drawings, maps, plans, images, documents and notes from the researcher's observations. Follow up data in case of additional communication might arise. The analysis of the data will take place after each case study trip, however an overall interpretation will follow when the case studies

are completed. Regarding the interview material it worth mentioning that because the interviewees selected for the pilot and case studies are experts in their fields, this research places considerable weight on their comments. The comments will be used selectively in the following chapters to emphasize the points that are being made, but the discussion and analysis will be critical of these points.

The data from the pilot study will put in thematic categories (Fig.14) and will be analysed immediately after the completion of each placement. The data collected either in textual, audio or visual form during the three case studies will be interpreted to identify common ideas and themes for this thesis. Data collected during the interviews (audio recordings) will be transcribed and main observations will be highlighted. The transcripts will be a 'word by word' text instead of a summary written by the researcher. The interview transcripts will be analysed through what Smith terms a systematic, qualitative analysis that will be 'turned into a narrative account where the researcher's analytic interpretation will be presented and also be supported with verbatim extracts from participants' (Smith et al., 2009:4). After the first examination of the transcripts, significant quotes, key words and main ideas relating to the research questions, and data will be transferred to post-it boards classified both by project or by theme to facilitate their grouping for discussion and analysis.

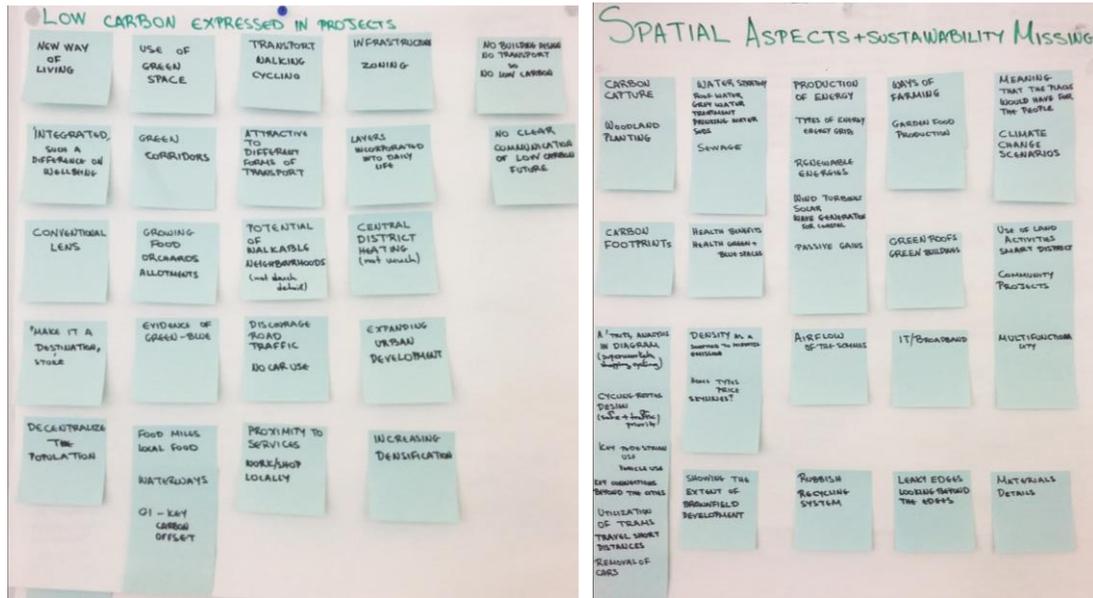


Figure 14: Example of the post-it boards created during the analysis of the pilot study.

The ‘post-it’ data collection will put in conceptual or thematic groups identified by the experts’ responses and re-arranged in order to follow the chronology of events (in cases of live projects) or match the research questions (for generic questions). Subsequently the researcher will try to keep the same themes for data collected from notes, observations and official documents possessed during the placements. Drawings and images will be analysed together with the textual data related to them and if possible similarities or differences will be identified, noted and highlighted. Although some interviewees draw as part of their interview, this was to help explain ideas expressed verbally which are therefore transcribed for analysis. The drawings themselves helped the process of the interview, but were not a useful product. Further interpretation, comments and ideas developed by the researcher will be noted and placed next to the ‘data findings’ with a different colour. That way it will be easy to distinguish what the original data collected during the case studies are (interviewees quotes, document phrases, policies, images) and what the researcher’s interpretation on these findings is. The analysis of data will focus on both the research questions as well as the ‘conceptual’

methodological areas developed by this research ‘identification-socialization-interpretation’ of landscape ideas.

Following this stage of analysis, the researcher will return to the research questions and identify the main themes related to the data and the aims of this research. A comparison of the results of the data analysis and the research’s questions will follow and bullet points of findings will be drafted. Subsequently the ‘bullet point findings’ will be structured in thematic areas aiming for further interpretation and connection with literature and research evidence. The main research questions, the bullet point findings, the existing literature and the significant interview quotes or observations are equated in tabular form. These will provide a complete tool of what was examined and what was found, integrating the experts’ views.

3.7 Ethics

This thesis complies with the Ethical Principles and Practice Policy Statement of Birmingham City University. The external funding received from Climate-KIC did not affect the ethical standard set by the university and all the methodological decisions were based on the principles provided by BCU. According to those principles:

1. The researcher was not seeking any confidential information related to any individual or organisation,
2. In the three cases examined, the researcher has negotiated project areas with the responsible organisation and obtained their full collaboration,
3. When individuals were interviewed their informed consent was obtained after a discussion about the aims and focus of the research. The intellectual property and copyright of individual interviewees and the practices they represent has been protected, especially for designers and institutions. The interviewees were informed of

the process and signed the declaration form agreeing to participate in the research. For exhibition work related to practices and practitioners, the copyright owner's prior permission was obtained. Individuals being interviewed have been offered the right to anonymity, but as they and their practices operate in the public domain they have all agreed to being identified; this has been explored with each individual. Participants have also been given the right to withdraw from the research at any point.

4. The three projects were fully in the public domain, as was most of the documentation examined. As some the projects are still under development (e.g. HS2) additional care has been given to the protection of sensitive data related to their project development and policies. However, these data are not considered as confidential, but sensitive, since the projects are still developing.

3.8 Climate-KIC summer schools; the experience

This research is funded by Climate-KIC, Europe's largest public-private innovation partnership focused on mitigating, socializing and adapting to climate change, and the EU with the aim of improving practice across Europe. In order to follow the funding regulations, the researcher will benefit from attending two summer schools organised and funded by Climate-KIC. Access to suitable institutions and professional organisations as suggested by Walsham (2006) will be maintained with the help of Climate-KIC and Birmingham City University and will be critical for the development of the research. 'The Journey' is a five-week summer school aiming to educate individuals in topics related to climate change, innovation and entrepreneurship and the 'PhD Summer School' is a two-week programme, developed for PhD researchers, focusing on different thematic areas across Europe. The mandatory participation at these summer schools, related to climate change, provides extraordinary networking

opportunities and the opportunity to develop new skills that are considered beneficial for the researcher. The two summer schools focus on thematic areas related to climate change and green transitioning and are mind opening for the participants, however they will not direct this study at any point and therefore there is no data related to these. The summer schools will improve knowledge of climate issues as well as the development of a strong network.

3.9 Limitations and challenges of the research

Limitations that are considered important and have affected this research are presented below. One of the most significant limitations is related to the geographical areas examined by the research. The focus on this research is the UK and Europe and therefore the case studies have been conducted at these locations. The focus on Europe is based on the funding limitations by Climate-KIC, which are restricted outside Europe. As a result, no case studies have been conducted elsewhere.

Other limitations consist of specific cultural or language constraints during the case studies. As two of the case studies were conducted in Spain and the Netherlands there were challenges where documents were only available at the original language or professionals did not speak sufficient English. However, some of the documents have been translated with the help of translation tools and members of staff at the placement locations. Specifically, for the HS2 case study limitations have been faced due to the fact that the project is in its design phase. As a result, there is limited or no access to final plans or drawings where the researcher could extract information from. Most of the visuals are still being developed and therefore some of the assumptions made may not meet the final plans. Moreover, especially for the HS2 case there was a constraint to some of the interviewees who could not reveal or show specific policies or plans.

However, this is only considered as a minor limitation as the research questions are not focusing on any of the 'limited' areas.

3.10 Summary

This chapter has illustrated the methodological structure and its relationship to the research questions. It has also described how data will be collected and analysed aiming to address the research questions. The pilot study explains the significance and support to the rest of the research. Detailed analysis of all the key stages for the three main case studies have also been presented and explained. Further issues related to the research such as follow up with interviewees, Climate-KIC summer schools and limitations were identified and the extent to which they have affected the research has been discussed.

Section II

Findings & Discussion

Introduction

The opportunity given to this research to observe and evaluate landscape schemes that have developed pioneer ways of processing and delivering large-scale projects has resulted in the identification of successful methods that enhance sustainability and spatial quality in landscape strategies. The way in which these key issues can be embedded in regional strategies, the role of drawings in communication and interpretation of large infrastructure and effective ways of delivery in relation to policy and legislation, have been identified and will be presented in three findings chapters.

The fact that key concepts can be addressed in a strategic level and that successful examples have begun emerging across Europe shows that a lot can be learned from practice, however an in depth understanding of project processes and strong communication are important. Based on the evidence found in the case studies, the development of a 'project framework' or a process suitable to 'shape' the vision of the project helps at the delivery as well as the integration of key concepts and ideas. The case studies reveal that good communication and understanding of issues such as low carbon, spatial quality (Chapter 4), drawings and design (Chapter 5) are important if sustainable and quality projects are to be delivered on a large scale. Politics, legal considerations, and policies (Chapter 6) have also proven to be much more important than was expected, facilitating the development of strategic landscape schemes and often control the integration of specific elements.

Three chapters will cover the data found during the research. Each one includes images, drawings and tables as well as interview quotes and evidence that illustrate the findings and explain the argument. Discussion of the findings will be included within each section since this is considered more effective for the communication of the thesis. Each chapter contains a summary of key points, which will be brought together in the Conclusion.

Methodological Introduction

As discussed in the Research Methodology chapter, this research is built upon three main case studies from which the majority of the data were extracted. Using the knowledge gained from the literature review about the specific topics, as well as the conceptual structure developed at the methodological phase (Identification-Socialization-Implementation) it has been decided that key findings should be presented in a thematic structure relating to the research questions. Therefore, the findings will not be given on a case study basis (revealing what was found in each case study), but on broader ideas that form common themes across the whole thesis.

The main chapters of Section II are:

4. Low carbon and spatial quality in the landscape context
5. Drawings and communication in regional landscape based spatial strategies
6. Delivery in regional infrastructure projects

Chapter 4

Low carbon and spatial quality in the landscape context

4.1 Introduction

This chapter examines the differences between the way in which issues of spatial quality and low carbon are introduced into large-scale regional design around Europe. Examining a number of cases which have dealt with the above issues, it demonstrates the impact on the landscape project process and how such issues are interpreted on a strategic scale. The economic support provided for these examples shows the governmental and political commitment to design quality and environmental stability, creating a political agenda relating to such key ideas. The engagement of legal entities and governmental parties that has been revealed for the Catalan, Dutch and British case studies will be discussed in Chapter 6, however this engagement relates to significant funding to the projects, enhancing the interest on low carbon and spatial quality explored by this chapter.

This chapter demonstrates that the pioneer schemes have developed their own ways through the various conceptual ideas of the landscape projects, generating a richness of interpretations and processes to make a project work successfully. These ideas can be embedded on a strategic landscape scale, using techniques of local clarification, engagement with local stakeholders and adopting the variability in meaning that different cultures might have. Observations during this thesis suggest that in regional landscape design, low carbon and spatial quality often equate to other qualities, making complex concepts more tangible. For example, the Room for the River programme equates low carbon with hydrological efficiency and spatial quality to aesthetic

meaningfulness (Dirk Sijmons, Interview, July 2015), while the Landscape Observatory associates such ideas with landscape awareness and public engagement (Pere Sala, Interview, June 2015). The HS2 demonstrates its interest in sense of place and the environment by relating to the concepts of landscape identity, sustainability and wildlife (Design Vision document – Appendix 7). These associations will be presented and discussed later in this chapter.

Interview quotations, excerpts from observations and images provide the evidence and comparisons with the existing literature will be made. The subchapters below focus on data extracted from the different case studies.

4.2 Communicating the landscape vision

The intention of this chapter is to investigate how concepts relating to quality and sustainability can be integrated into holistic landscape approaches and how they are being identified or understood. This section examines what low carbon and spatial quality mean for the landscape and how they are considered in landscape strategies in different European countries. Case study observations and interviews have shown that it is sometimes challenging to give a ‘tangible’ or ‘physical’ substance to these concepts, but the effort to create a physical interpretation of intangible ideas, demonstrated by the Netherlands, Catalonia and the UK projects (specific examples to follow), shows that they are considered important. This research agrees with Lutz (2008) who, discussing the ‘ingredients’ of spatial quality in a public space, states that ‘it ought to be possible to describe what it is that makes a space attractive [...]. It is the overlapping and contradictory stories told by the space, in particular, the people and their interaction with their surroundings, which are intriguing’ (Lutz, 2008:35).

Observations reveal that the case studies have dealt in their own unique ways with the issues examined, and that these ideas can be interpreted in various elements such as ecological coherence, landscape identity, regeneration, public engagement and more, all related to the landscape context. Best practices identified during the field visits will be presented here and examples of how the concepts of quality and low carbon can ‘spatially’ look like will be given at §4.3. Interview evidence and case study observations suggest that a process is required in regional strategies in order to find ways to identify these intangible elements in a spatial context.

This section proposes that such issues are important for regional landscape design and acknowledges that they have various interpretations depending on cultural context. Examples based on the pioneer projects indicate that the stronger the identification and spatial interpretation of these ideas, the greater the effectiveness of the vision; raising the likelihood that the vision will be embraced by the community and attract visitors. Landscape projects that have dealt successfully with quality and low carbon at a regional scale are explored by this section. Figure 15 presents the steps to make a vision clear, as it has been perceived by the researcher and embedded into this chapter.

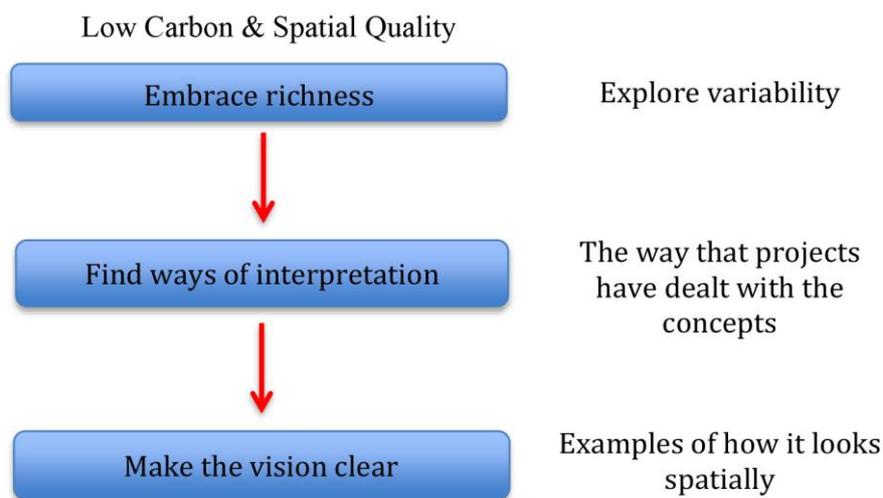


Figure 15: Main stages identifying ways in which low carbon and spatial quality relate to the landscape vision as developed by the researcher.

The case studies investigated by this research show that each landscape project identifies spatial quality and low carbon in its own unique way, which enables the project to be linked to values and principles of a specific location for them to be interpreted in various forms. They reflect the cultural and social characteristics of each country. The Landscape Observatory (Case study 1), for example, has developed specific tools across different territories of Catalonia by defining landscape quality values and objectives for specific locations. The methodology followed for the creation of the landscape catalogues, (document possessed as an outcome of the follow-up with interviewees), demonstrates that ‘the catalogues started with an integrated vision of landscape that takes the natural and cultural components jointly, never separately’ (Nogué et al., 2016:15). The quality and environmental issues are equated in the landscape catalogue documents as a number of elements. As Nogué et al. (2016:15) suggest, ‘landscape is understood [...] as an area, as perceived by people, whose character is the result of the action and interaction of natural (such as the relief, the hydrology, the flora and the fauna) and/or human (such as economic activities or historic heritage) factors’.

At the Cerdanya project in Catalonia (another project of the Landscape Observatory), the ‘spatial’ understanding of sense of place is developed through ‘quality maps’ as Irene Navarro (Environmentalist/Landscape Architect in Landscape Plan Cerdanya) explained (Interview, June 2015). The decision made by the Landscape Observatory team was to create a visual map expressing quality objectives to address such key concepts spatially in a wide context (§5.5 – Fig.60). This process, Navarro explains, is an innovative way to deal with complex ideas, a way to ‘think what do we want for the landscape in the future’ (Interview, June 2015) and therefore find ways to understand it, interpret it and express it in a spatial way that suits a specific location.

In the Netherlands, the first goal of the Room for the River programme (Case study 2) was to address water safety and climate adaptation, while spatial quality was recognised as the second aim of the scheme, as presented in governmental press releases (Jesse, undated; Nijland, 2007). During the decision-making process as well as the designing, planning and implementation phases of a large-scale scheme the concepts of sustainability and landscape quality seem to be high on the Dutch agenda. Nine different methods dealing with the issue of water safety were developed across the Room for the River programme depending on the location, considering individual needs of each area, shown in Figure 16.

How we are making room for the river

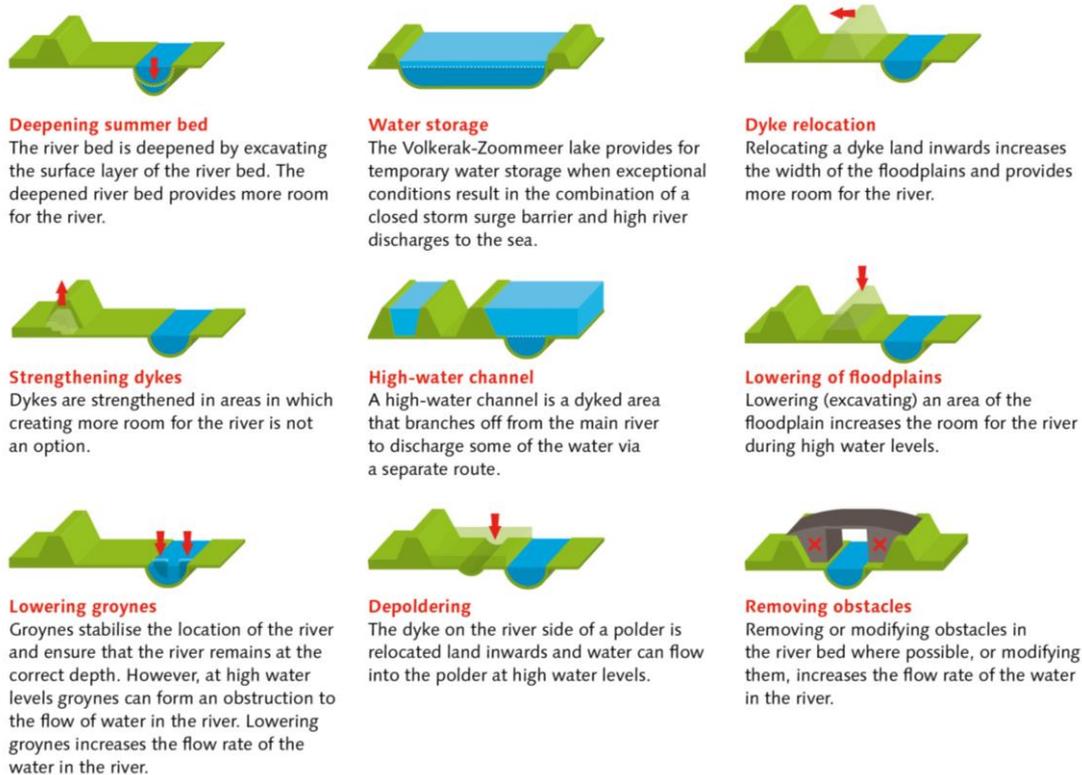


Figure 16: Diagrams demonstrating the nine different methods proposed by the Room for the River programme addressing water safety. The methods were used considering the location, the geographical characteristics and social impact. Source: Room for the River.

Low carbon and spatial quality were given a specific ‘definition’ for this landscape strategy. Dirk Sijmons (State advisor on Landscape for the Netherlands) explained

during his interview that ‘we had to give a definition of what we thought of spatial quality’ (Interview, July 2015) on this landscape programme. Therefore, according to Sijmons, water safety, low carbon and spatial quality, for the Room for the River Programme, are very important for the scheme (Fig.17) and equate ‘as the elegant coherence between: 1. Hydrological efficiency, 2. Ecological soundness and 3. Aesthetic meaningfulness’ (Dirk Sijmons, Interview, July 2015).

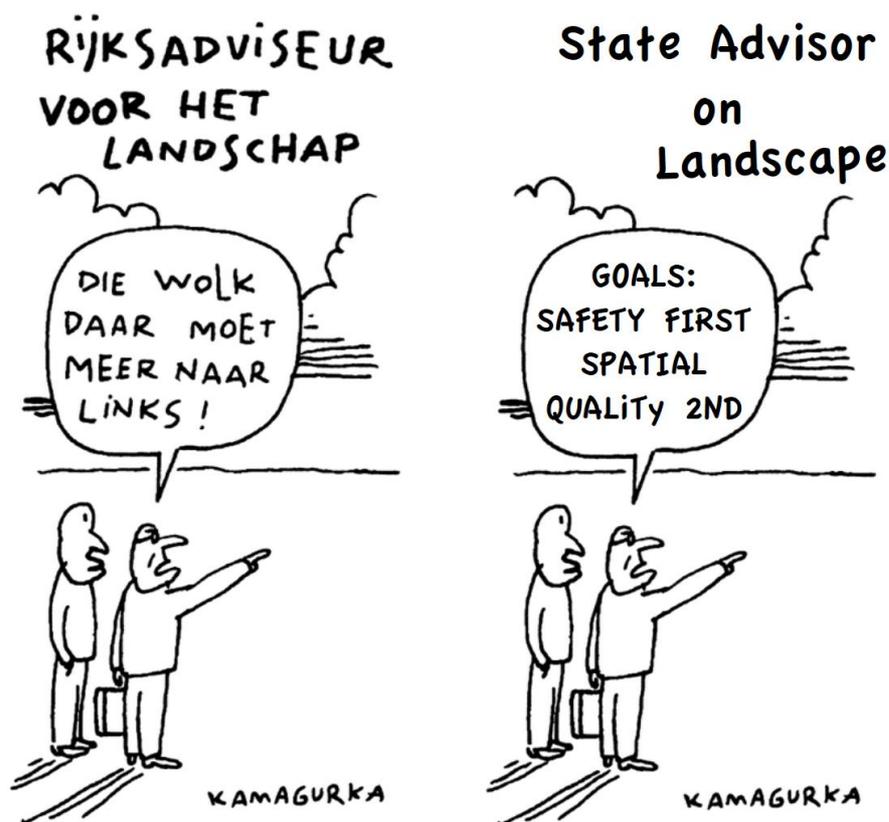


Figure 17: Cartoon explaining how the state advisor on landscape identified the two main goals of the ‘Room for the River’ programme. Source: Dirk Sijmons (original source unknown).

As a result, the terms presented above will be associated with low carbon and quality concepts when referring to the Room for the River scheme and the evaluation of the programme’s effectiveness will also be based on these ideas. The approach developed for the Room for the River Programme regarding sense of place was recognised and identified based on the geographical and environmental characteristics of the area as well as the cultural elements and values of the country

(<https://www.youtube.com/watch?v=cCAHgSMauYE>, Appendix 3). Sijmons' equation of concepts shows that one way to deal with such complex ideas is to interpret them for the specific location and the needs of the landscape project, so it is possible that the spatial dimension of such ideas will change depending on cultural context and location.

Jan Van der Grift (Senior advisor for spatial and environmental quality, Room for the River), discussing the importance of concepts such as hydrological efficiency and ecological soundness in landscape schemes, explained that climate change is not something people can immediately see, and therefore it is not easy to understand it. 'The only way to persuade them is by enhancing or improving spatial quality. And it's important to be part of you, it's done for the society' (Interview, July 2015). Van der Grift also suggests that to engage the public on environmental issues requires attention to aesthetic meaningfulness, highlighting the connection between these ideas and their relation on large-scale schemes.

The case of the 'New Dutch waterline' (Case study 2) is another example on how to address similar issues. Dirk Sijmons was also the chair of the Quality Team for the New Dutch Waterline Programme and explained that 'the goals of this national scheme were to prevent building in the inundation zone and give a new life to this enormous artefact. Explore its value' (Dirk Sijmons, Interview, June 2015).

Muilwijk (2015) presents the three main goals for the New Dutch Waterline scheme:

1. To redevelop the New Dutch Waterline as a recognisable landscape, enhancing visibility and accessibility,
2. To enclose the New Dutch Waterline as a national monument in the minds, hearts and hands of owners, visitors, inhabitants and experts and

3. To support a socially and economically sustainable exploitation of the New Dutch Waterline (Muilwijk, 2015).

Being a national programme with significant landscape and historical interest, the New Dutch Waterline was aiming to address sustainability by preserving and improving the existing land around the fortresses (§3.4A.1). Spatial quality is also a significant element in this scheme and, in this case, it was interpreted as an idea of preservation, cultural enlightenment, touristic opportunity, and celebration of the historic legacy. Since this landscape strategy was based on the existing engineering infrastructure of the Dutch defence line and the fortresses, several regulations and limitations applied. For example, areas considered for development were only the areas along the fortresses line in order to avoid interruption of the open spaces and the land that used to be inundated during the war. The scale of the project and the locations of the fortresses are shown at Figure 18. The areas of development, values, preservation concepts and historic awareness methods were also officially presented by the Dutch scheme (<https://www.youtube.com/watch?v=fmypPoj5kjM>, Appendix 5).

The third case study of this research is in the design phase and therefore some of these steps are still developing. HS2 received Royal assent (Act 2017 c.7, 23rd February 2017) and HS2LV is an advocacy tool supporting the idea of design quality. Both HS2 and HS2LV highlight the fact that there are initiatives that work on the identification of low carbon and spatial quality (Tony Burton, Interview, September 2015).



Figure 18: Left: Map of the ‘New Dutch Waterline’ landscape scheme showing the defence line and the locations of the fortresses that have now adopt different uses. Right: Showing the whole defence line, the locations around the fortresses that were inundated in the past and are now regenerated open areas. Source: public material – collected from Water Museum, the Netherlands.

With regards to the data presented above, the ideas of hydrological efficiency, aesthetic meaningfulness, preservation, celebration of historic legacy and design quality need to be part of the landscape project process in a way that addresses the aims and vision of each landscape project depend on its characteristics and geographical location. As a result, the issue of who are the most suitable experts to establish such important elements has become a valid argument in the examined case studies. Do these projects need a specific team working on such ideas, and what are the most effective processes so far?

The Room for the River and the New Dutch Waterline Programmes demonstrate that a team of experts dedicated to support intangible elements of landscape schemes can be very effective in their interpretation on large-scale schemes. The development of a 'Quality Team' by the Netherlands case study, responsible for the identification, security and preservation of some ideas has been proven helpful. In a similar approach, the HS2 project has also formed a sustainability and design panel (Design panel remit document, Appendix 8) aiming to improve the ways in which the spatial dimension of the low carbon and spatial quality concepts are dealt with. It is important to highlight that the 'identification' of the concepts (§3.1) needs to be secured at all stages of the landscape project and not to be introduced at the delivery phase.

This section has shown that there is a real urge, on the part of the pioneer projects, to address these elements, aligning with the fact that they are considered as emerging topics in the current literature. Bulkeley et al. (2011) state that 'there is evidence of a shift in urban thinking on climate change as cities are taking a more strategic approach to climate change'. This research emphasizes that such issues can be addressed on a regional and national scale and the three case studies examined here form such examples.

4.2.1 Variability of interpretation of both spatial quality and low carbon

The term of low carbon has developed mainly during the late-twentieth century (20th), but the idea of spatial quality is quite well established. Pilot and case study observations suggest that the variation of understanding in these concepts often results in a wide range of landscape interpretations. This section illustrates some of the experts' views about low carbon and spatial quality. A significant number of the professionals who completed the pilot study questionnaires (Appendix 16) believes that low carbon and sustainability for the landscape is something that has to do solely with carbon as a chemical element related to carbon cycle, materials, energy, CO₂ emissions and transport. Surely these are an important part, but is this the only way to interpret them? This research argues, based on the interview data presented below, that on the regional landscape scale, low carbon can be interpreted in a variety of other ways such as a sustainable lifestyle, low carbon design visions, and rich areas in social and environmental qualities. In the case of spatial quality, the various and different meanings range from the way of living to behavioural change.

Some of the interviewees identify low carbon as a concept very different from landscape quality. However, another group of interviewees has interpreted low carbon in relation to the idea of sense of place. Based on responses to the question 'what do you understand is meant by the term low carbon in the landscape', during the interviews and questionnaires (Appendix 16) of the pilot study (taking place in the UK), it was revealed that there is a diversity of ideas that can lead to a variety of spatial interpretations. Some are convinced that 'low carbon' is only related to carbon emissions, energy and transport (Ben Gray, Nick Barlow and Ken Harrison, Interviews, March 2015), while others attribute it to a way of living and a low carbon lifestyle

(Katherine Fuller, Kate Martin, Dave Green and David Tittle, Interviews, March 2015). What was identified during the research is that interviewees who have experience in low carbon transitions have a much broader idea of what the term can encompass and how this can be interpreted in the landscape. Also, most of the interviewees who are dealing with design tend to have a broader idea of how low carbon can be interpreted compared to the ones who are trained as engineers or have a scientific background. In agreement with Gobster et al. (2007) who state that 'a complementary relationship between aesthetic pleasure and ecological health in the landscape is desirable', this research suggests that low carbon, sustainability and spatial quality should be treated as intertwined concepts when it comes to regional landscape design.

Land Surveyor Nick Barlow stated during his interview that he understands low carbon as mostly buildings (materials) and transport (energy), or what in general can be described as 'reducing emissions'. 'I don't think the creation of parks or nice waterways or whatever, speaks to me about low carbon per se it's all about this holistic approach. But I don't see it as relevant in terms of low carbon' (Nick Barlow, Interview, March 2015). Other interviewees have expressed the same view; land agent Ben Gray recognises low carbon in urban developments as an aspect of energy and transport (Interview, March 2015). Town planner Ken Harrison also believes that it is about energy efficiency, however he expands the term to carbon footprint, green infrastructure, trees, travel, renewable energy and more (Interview, March 2015). Different evidence has been collected during the interview of Kate Martin (Programme manager at Climate-KIC) who, replying to the same question, stated that low carbon is much more than the term can describe. She argues that 'low carbon is really diverse in many ways and it means so much more' (Interview, March 2015). Emphasising a similar approach, Katharine Fuller (Senior project manager at Climate-KIC) replied

that ‘lower CO₂ emissions considered in the planning of how people live, work and enjoy urban and landscape spaces’ (Interview, March 2015). These experts suggest that sustainability in the landscape needs to be explored, understood and expressed as a broader concept that relates to our way of living. ‘Carbon is symbolic’, David Tittle (Urban Designer) also stated during his interview, arguing that we often use the term ‘carbon’, but this just stands for all the other things and ideas and that ‘perhaps more important overall is the lifestyle that it generates’ (Interview, March 2015). The above evidence demonstrates different ways of interpretation and also gives indications that quality of space and sustainable living are interrelated. They suggest that the interviewees who deal with technological and scientific approaches recognize these terms only as ‘numbers’ (or ‘numerical evidence’), while interviewees who work in the field of landscape or climate change consider a more holistic and integrated approach. Jeroen de Vries (Landscape Architect), discussing sustainability and landscape design, stated that ‘as landscape architects we are sustainable in the way we are working, but what we don’t do is to make it explicit. That’s one of the difficult things’ (Interview, July 2015).

A Venn diagram (Fig.19) was produced after the pilot study interviews and questionnaires as a way to demonstrate the wide range of interpretations, and show that low carbon equates to many elements. There are cases where the concepts of low carbon and spatial quality overlap such as ‘creating a destination’, ‘a way of thinking, being and designing’ (Fig.19) and in contrast there are single views from other interviewees relating to energy, transport and buildings. These phrases and words consist of answers that were collected during the interviews and is evidence that even experts in the field have their own ways of interpretation when it comes to intangible elements.

Although there is a great diversity and richness in the way that aesthetic meaningfulness, design quality, hydrological efficiency and ecological soundness are interpreted, it is their spatial dimension that is challenging to understand in the landscape context. The case studies and interviews show that these terms might be ambiguous, but can be uniquely interpreted by the project team in a way that suits the overall idea of a scheme and addresses the needs of the area. In practice, such concepts are being introduced in landscape projects, but this way of working is not yet evident in the literature. Examples extracted from the case studies, such as the project of Nijmegen (Room for the River), demonstrate that such ideas can be dealt at a strategic level and form a successful and popular for the public landscape design. During his interview, Mathieu Schouten explained that one of the main challenges was to define spatial quality. He stated that ‘it’s difficult to say what spatial quality is. We tried to define it by making drawings and making concepts for this [...], we said quality is the water levels that have changed. This is a very specific ‘quality’ of this natural place’. Jan van der Grift (Senior Advisor on spatial quality at the Room for the River project) explained that ‘spatial quality it’s a vague term for many people . . . unfortunately’. He continues, ‘I use phrases like the area which you can use, you can have a look at, the area which you want to enjoy and which is also sustainable in keeping it or developing it’ (Interview, July 2015). With the focus of this research on regional landscape design, an understanding of what these concepts mean for the landscape is considered important, but the recognition of a spatial dimension is also necessary. When Van der Grift was asked if spatial quality is important for the overall scheme, he stated ‘No it’s essential! It’s not very important, if you say it’s very important we can talk and talk about it, but it’s essential for the success of the Room for the River’ (Jan van der Grift, Interview, July 2015).

Emphasizing the wide range of meanings, Tisma (2003) states that ‘spatial quality is a broad concept that implies personal values and subjectivity’. With regard to research data on spatial quality, interviewees who have expertise in landscape strategies and design are aware of the concept, but they often find it challenging to explain or express it. Interviewee Mathieu Schouten also explained that if you are not familiar with the idea of sense of place, it is not easy to understand and interpret it (Interview, July 2015). Annika Hesselink (Technical Manager in Noordwaard project/Room for the River) explained that ‘the improvement of spatial quality is also different for each project. Here [Noordwaard] it’s an improvement of nature, a little bit of recreational and quality. In other projects or other locations, it is more recreational quality and less nature quality, so that’s different’ (Annika Hesselink, Interview, July 2015). But as Kathryn Moore (member of Design Panel for HS2) stated during her interview about HS2LV, ‘spatial quality is actually the journey through the landscape, it makes the experience of living better’ (Interview, June 2016).

Interviewees from the Netherlands case study have been found more ‘confident’ in discussing the ideas of landscape quality, and this might be because they have created a process that suits their location and needs or a ‘formula’ on how to handle such complex ideas (Schouten, Van der Grift and De Vries, Interviews, July 2015). Data suggest that when the concepts of low carbon and spatial quality are integrated and considered equally important to a landscape scheme, then it is much more likely to achieve a sustainable and quality space. As Mathieu Schouten explained for the Nijmegen project, ‘as a city we said, well if it has to be done, it has to be done well, with a good quality and good landscaping. So, we made an integrated plan with nature, development, recreation facilities and of course water safety. And we combined them in one masterplan’ (Interview, July 2015). Pickerill (2010), discussing liveable cities

and low impact development relatively recently, argued that ‘we need to look beyond technological innovation for solutions’ in this area. And it is this point that the case studies of this research have explored. The variability of the concepts could also be reasoned with the different needs that the projects might have depending on their location and project philosophy.

4.3 How pioneer projects have dealt with these issues

Since the case studies are in different stages, their vision is often presented in various ways, but this could also be an indication of different ways of thinking, different practices or cultural characteristics. Images, maps, drawings, reports and verbal communication explain the reasons and advantages of their development.

The HS2 project, the Landscape Observatory and the Netherlands case studies are all aiming to make their landscape vision clear and the concepts of low carbon and spatial quality visible, even though they have chosen different ways of representation. Examples of how these projects have used the ideas of spatial quality and sustainability through maps, drawings and design will be presented here as a way to show how they have dealt with these issues, however drawings and communication will be fully discussed on Chapter 5. The notion that ‘the quality of a space is the extent to which that space satisfies the expectations of a community’ (Goethals, 2007:1) is quite close to evidence from the Landscape Observatory, where community engagement is very important for the landscape. As the Observatory director and team, Nogué et al. (2016:28), suggest, ‘the participants are the genuine protagonists of any participation process [...] and the mechanisms of the catalogues were mainly directed [...] at the landscape stakeholders and society as a whole’. Therefore, a significant part of the work examined in Catalonia has to do with quality of space as well as community

engagement. The concept of sustainability is not forgotten, but it is mainly interpreted as environmental elements and land values. In this case, the key ideas are presented through specially developed maps and drawings that are informative about the landscape and aim to enhance the understanding of the land. For example, Figure 20 shows the regional land analysis for Catalonia, where the concepts of quality and land values are mainly presented in maps showing vegetation, fauna and agriculture. As Castells (Head of the Land Planning and Analysis Office of Catalonia) explained, the land analysis for the region of Barcelona shows woodlands, open spaces, aquatics, fields and low to high connectivity of fauna (Carles Castells, Interview, June 2015). The analysis has mainly focused on environmental elements and vegetation. As Castells explained, the development of visuals such as those presented in Figures 20 and 21 are aligning with the concept of changing the current paradigm on natural areas from 'no touch' or 'empty' spaces used only for building sites, to a modern, dynamic, humanistic and strategic overall view of their natural and social values as well as their benefits to human life (Carles Castells, Interview, June 2015).

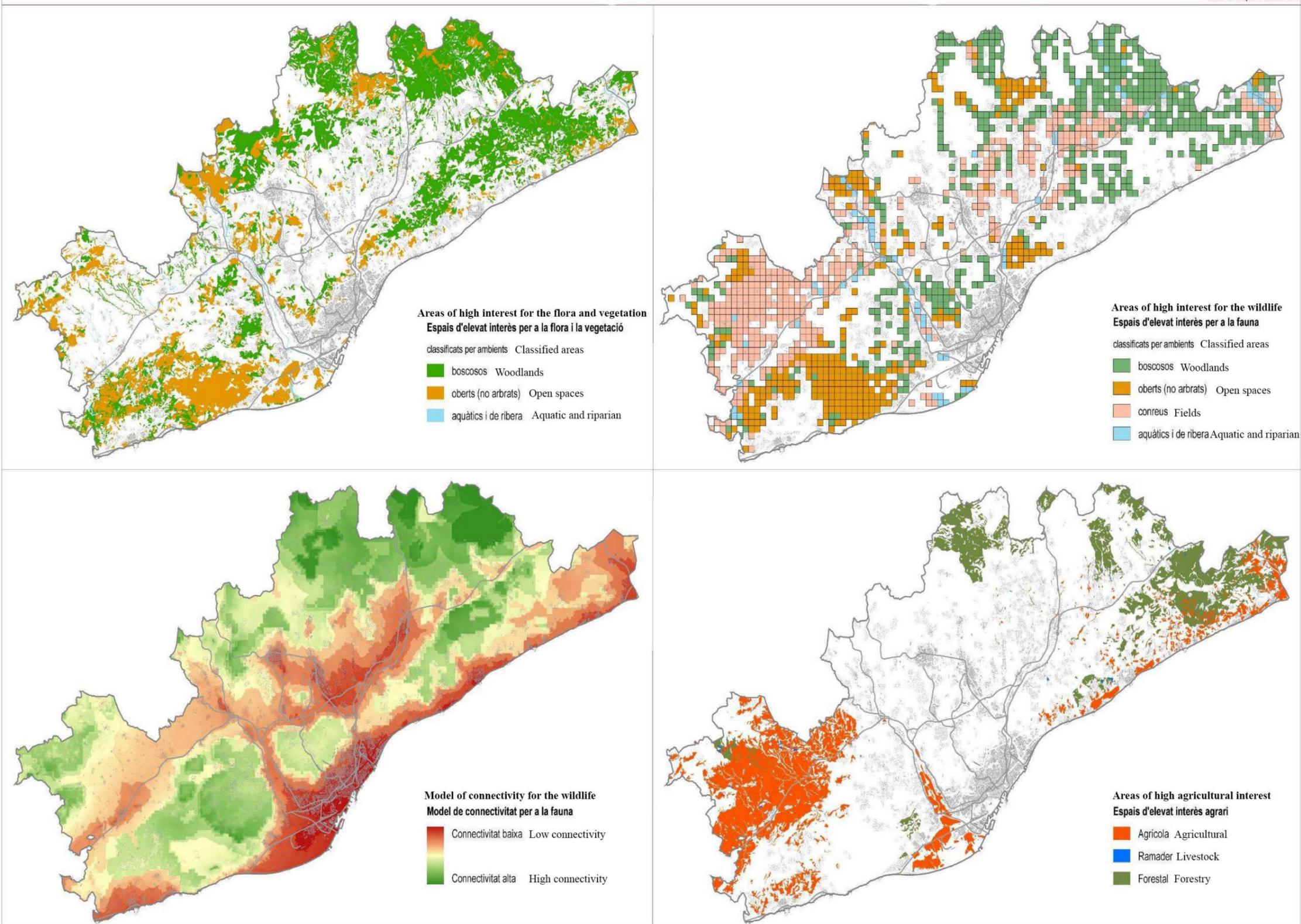


Figure 20: Regional land analysis showing vegetation, fauna, connectivity of fauna and agriculture for the broader region of Barcelona. Source: Carles Castells, personal archive.

The visual representation of the sustainable and landscape quality as well as the characteristics of the land, the social and cultural elements are all indicated below. Using the maps provided, it is possible to understand how the concepts can be spatially interpreted and how this might affect the development of landscape schemes. Castells, discussing the maps in Figure 21, stated that ‘we are trying to combine the description of values and assessment of plan, not only the plain description but trying to give an added value in terms of real assessment of this interest’ (Carles Castells, Interview, June 2015). Especially for the habitats map (Fig.21-left) Castells explains that ‘this is a habitats map created by specialists and we have converted it into an assessment map depending on ... in this case around 12 different indicators of value, vegetation, habitats and flora and we have combined them and converted it to this. This map shows the value on habitats for the whole province. So, we can start to see areas of interest, humid mountain areas, areas in the coast, different types of habitats that are of interest’ (Carles Castells, Interview, June 2015). These drawings are used to distribute knowledge on the value of botanical habitats with the areas in yellow having low value, and the darker brown areas high value. Figure 21 also contains the map of geological risks where potentially unstable areas (purple), areas with potential to erosion (brown) and no risk areas (beige) are shown. These drawings demonstrate another way in which the intangible ideas of spatial quality and environmental soundness become tangible by being expressed on a map.

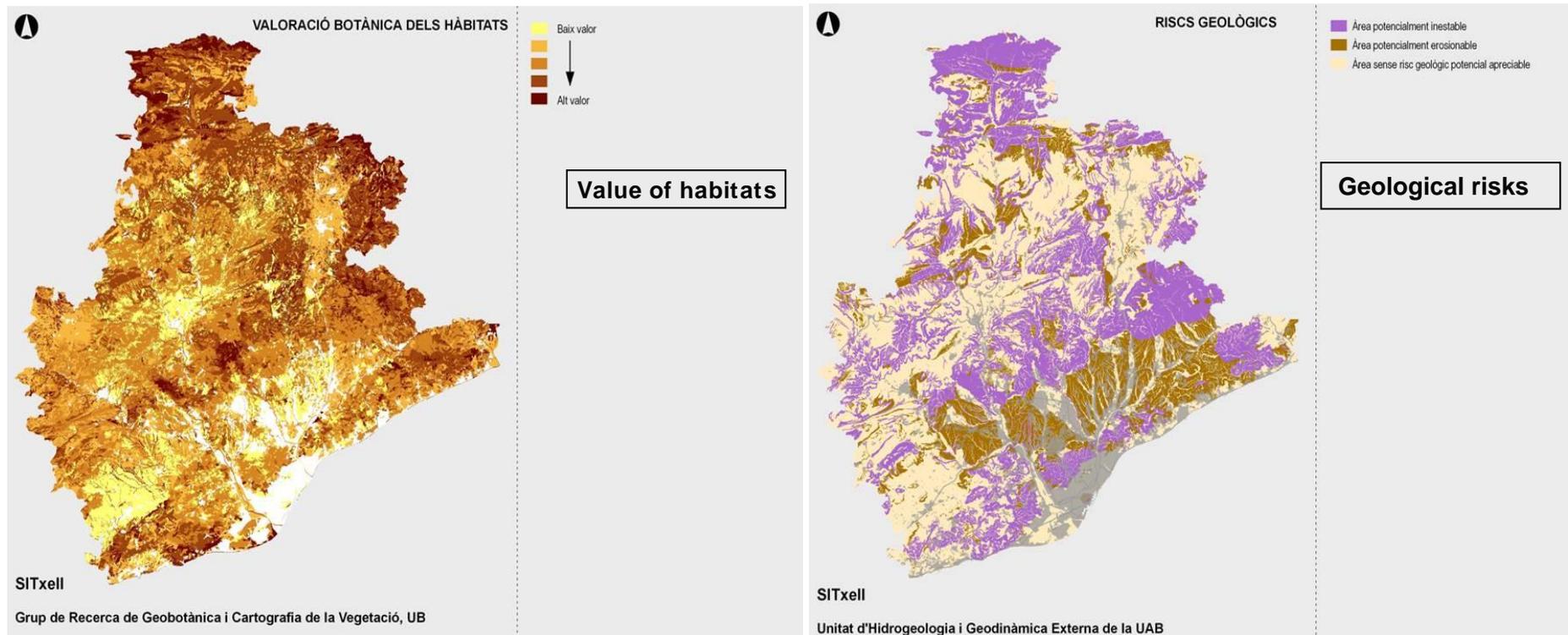


Figure 21: Visual representations of quality elements in Barcelona. On the left is the map of the botanical habitats and on the right the map of geological risks. Source: Carles Castells, personal archive.

The Netherlands case study uses a very different way of dealing with such issues. It focuses on the implementation stage and what the projects will look like when they are built. The Room for the River Programme is linked to climate adaptation. Water safety and spatial quality are defined as hydrological efficiency, ecological soundness and aesthetic meaningfulness (Dirk Sijmons, Interview, July 2015). In addition, the New Dutch Waterline Programme is focusing on preservation of the areas and regeneration of social and cultural activities.

The sketches, drawings and designs below (Fig.22-41) consist of examples of how this merging of preservation, ecological soundness and aesthetic meaningfulness (Dirk Sijmons, see p.97) can be presented. Preparing the ground for the chapter focusing on drawings (Chapter 5), these drawings will explain the ideas around those two concepts (low carbon and spatial quality) and the way the designers have interpreted them from concepts to reality. Evidence shows that the key action for such intangible concepts is to use a surrogate, a metaphor that makes it visible to the audience (§4.2). Having explained that the individual projects of the Netherlands were ‘flexible’, able to develop their own strategy depending on the character of each location, this section presents examples of how these key concepts can be spatially interpreted.

The ‘Room for the River’ programme (Fig.22) spreads across four different rivers in the Netherlands, IJssel, Lek, Maas and Waal, and exhibits variations in the landscape, topographical and geographical characteristics. Comparing the concepts and the designs of both the urban scheme of Nijmegen (Dyke Relocation method, Fig.16) and the rural project of Noordwaard (Depoldering method, Fig.16), the section explores how similar ambitions can be presented in different ways depending on the content. The concept and key qualities such as aesthetic meaningfulness and hydrological efficiency are sufficiently flexible to be applied to both urban and rural projects, where

the design expression and materiality is very different, as the examples show. Even though the two projects have the same goals (water safety and spatial quality) their interpretation and implementation methods are different, leading to a social and business focus for the urban scheme of Nijmegen in contrast to the exploration of nature for Noordwaard.

For Nijmegen, the oldest city of the Netherlands, the Room for the River project was an opportunity to future-proof the city, give room to the river and also create sustainable and environmental places. As lead landscape architect, Mathieu Schouten, explained the concept was ‘Nijmegen embraces the river Waal again’ (Interview, July 2015). Following the main conceptual ideas of the landscape programme, the city decided to create a low carbon design, aiming to provide the area with new activities and high quality space. The major experiment of changing the way the river Waal flows from ‘passing by’ Nijmegen to ‘passing through’ Nijmegen (Fig.23) (<https://www.youtube.com/watch?v=wYM1e2ANUFU>, Appendix 6) was a huge exercise involving the relocation of the dyke in Lent. The construction of a new bridge crossing with the longest cycling highway, new city districts, residential zones and regeneration areas were also developed while the scheme evolved. Examples of the construction phase drawings from 2012-2016 are presented at the Appendix 12.

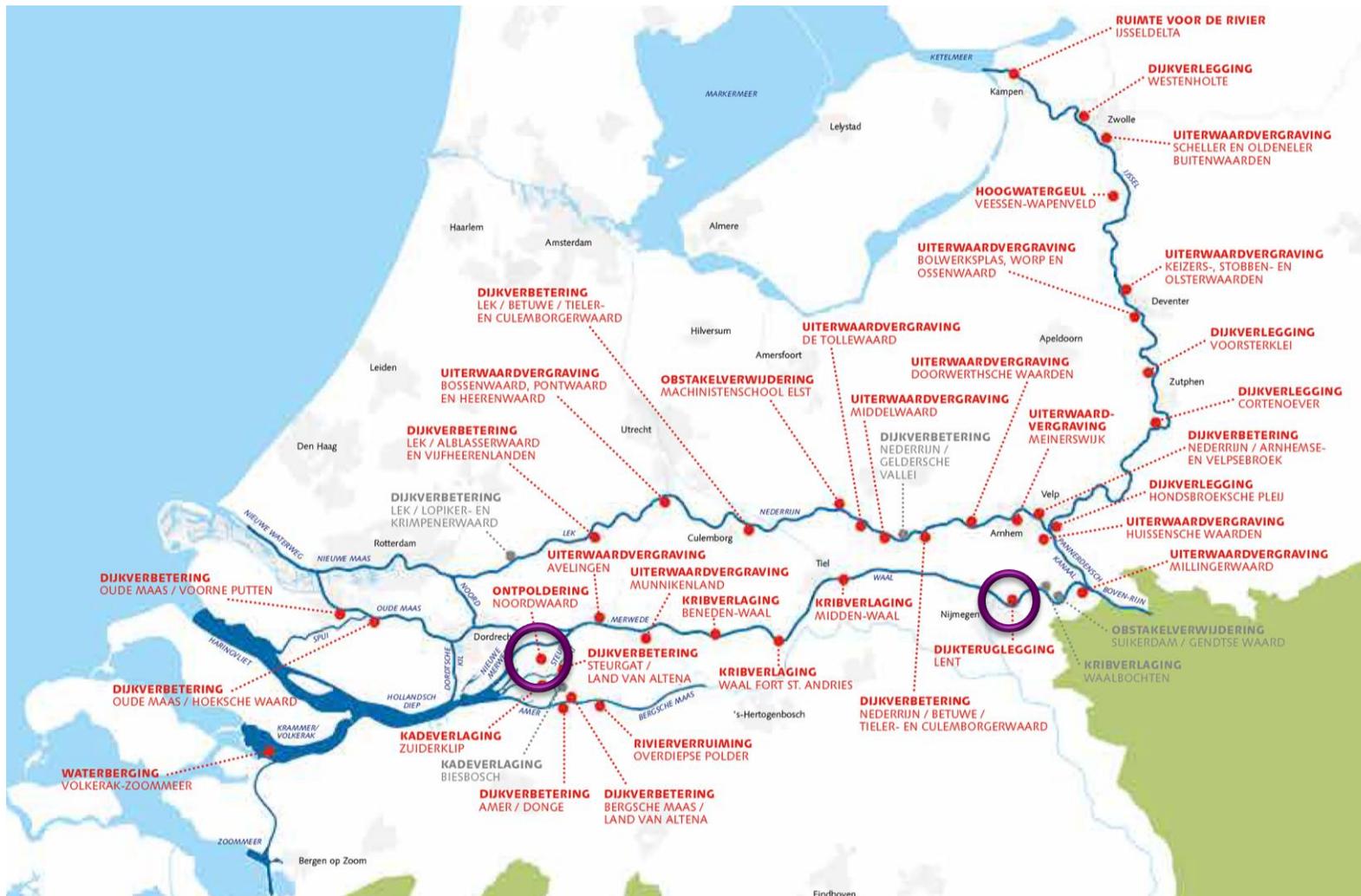


Figure 22: Map presenting all the 34 locations where landscape projects of the ‘Room for the River’ programme were developed. The two locations highlighted on the map are the two examples that will be presented below. On the left circle is the rural project of Noordwaard and on the right, circle the urban project of Nijmegen/Lent. Source: official document collected by Author from Rijkswaterstaat, June 2015.

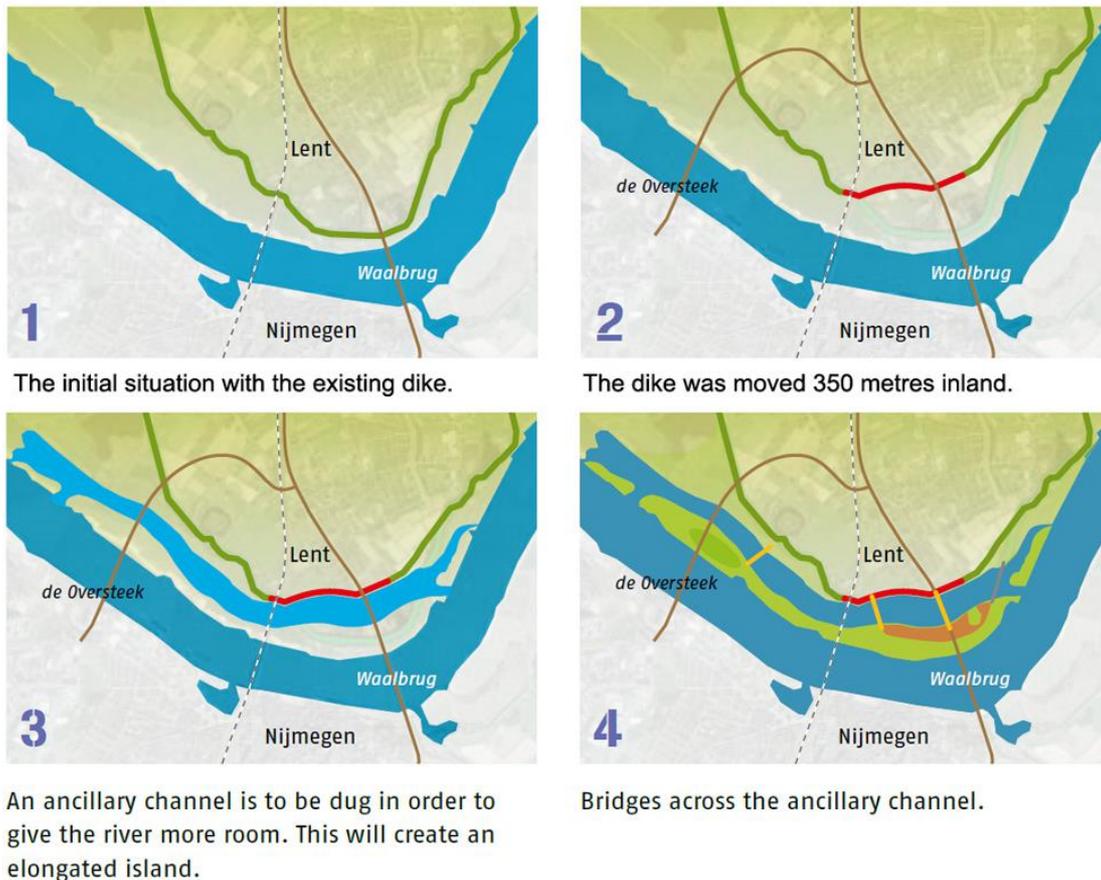


Figure 23: The dyke relocation in Lent and the creation of a new island, allowing river Waal to flow through Nijmegen. Source: city of Nijmegen, n.d.

The creation of the island in the river Waal results in a unique urban riverbank with significant possibilities for recreation, culture, nature and history. ‘One-third of the water goes through the new water channel and two-thirds go to the old river channel’ explained Mathieu Schouten (Interview, July 2015). This scheme adopted a broad concept looking at the landscape and the region. Addressing water flooding (a significant climate change outcome), it has managed to utilise its unique location to make it attractive for locals and visitors, exploiting the landscape and the existing historical elements. As presented in the infographic of the Nijmegen dyke (Appendix 10) and also explained by the lead landscape architect of the scheme, a recreational river park will be built and part of the new island will be available for housing, business and social activities (Mathieu Schouten, Interview, July 2015). Creating a vision around

the issue of water safety, the landscape project of Nijmegen is an example of an urban scheme with both hydrological and quality elements.

The plans included a new city bridge to improve accessibility to the city (Fig.24), limit traffic and therefore minimise CO₂ emissions. Objections were raised against the amount of CO₂ emissions created by the building of city bridge, but what is suggested here is that integrating spatial quality elements and low carbon ideas in such a development could eventually make up for the CO₂ emissions, while the same time providing a quality space. Schouten stated that in the Nijmegen project ‘we didn’t design them only as bridges (function), but also as places to go. It’s not only for traffic, but also to make an appointment with your friends’ (Mathieu Schouten, Interview, July 2015). Aiming to create a culture around sustainability and promote behavioural change this initiative is equating low carbon as cycling and walking routes, river banks and open spaces (Fig.25) while the same time the integration of quality elements into its design make the space attractive and popular to locals and visitors. As stated by the official online sources of the Nijmegen project, moving the dyke at Lent 350 meters towards the hinterland addresses the high water challenge where the same time transforms an industrial park to residential neighbourhood, involves the construction of a city bridge ‘De Oversteek’ and the development of the central area ‘De citadel’ and embraces historic and natural features making the area attractive to tourists (<https://www.ruimtevoorderivier.nl/room-for-the-waal/>). Mathieu Schouten during his interview also explained that ‘the nature [vegetation] and water, goes through on both sides of the city, but we can also make a connection and a place where people can meet from the North and the South bank. There are a lot of opportunities on the channel for rowing and all sorts of things. The name of river park is for everyone to say well it’s not only for water safety it’s a living environment’ (Mathieu Schouten, Interview, July

2015). He also added that ‘this is also about sustainability. For this new area, we have a sustainable water system, the rainwater will be gathered by water channels and also lakes’ (Mathieu Schouten, Interview, July 2015). Providing a land that changes each time the water level rise, grasslands, an amphitheatric area where people can socialize, tree avenues, cycling routes, sailing activities and sustainable housing shows what hydrological efficiency, ecological soundness and aesthetic meaningfulness can be expressed too.



Figure 24: Visualisation of the Nijmegen project, showing the use of the cycling highway aiming to increase environmental awareness. Source: city of Nijmegen, n.d

As Schouten stated, ‘we also thought that it was a challenge to do this and then we said, water safety can become a river park where people can stay’ (Mathieu Schouten, Interview 2015). But the flexible ideas of low carbon and spatial quality are not only related to the physical characteristics, they were also embraced through a series of events engaging the community. The lead landscape architect explained that the project team made an animation, so people could understand the main concept, they organised

‘educational excursions’, they visited schools and opened the project to visitors, facts that helped public to become enthusiastic (Mathieu Schouten, Interview, July 2015). Following the ideas of Pickerill (2010), that ‘our future urban spaces need to be better designed to reduce our collective environmental impact, but they also need to be accessible to a diverse population’ (Pickerill, 2010), the landscape project of Nijmegen is turning the ‘necessity’ of addressing water levels (Nijssen, 2011) into an opportunity for enhancing spatial quality. Drawings and visuals have played a major role in order to express the designers’ ideas, as well as a communication tool for the implementation teams and the public. With the use of visualisations, the low carbon and spatial quality concepts are better understood and are given a spatial dimension making them more approachable and recognisable to the public (Nijmegen won the Waterfront Centre Award in New York in 2011, resulting in many international delegations to visit the project each year).



Figure 25: Visualisation of the Nijmegen project, demonstrating the grasslands, the bridges and connectivity between Nijmegen and Lent as well as the new water channel that addresses the water challenge. Source: city of Nijmegen, n.d.

The landscape scheme of Nijmegen has also considered the possibility of major flooding. For that reason, residential and business developments are located at the top of the island (Fig.26) where they will remain dry in times of flood, when the same time surrounding areas have been designed in a way that adds attractiveness to the project, such as the cultural heritage, the rowing facilities, the beaches, access to cyclists and the social areas (Mathieu Schouten, Interview, July 2015). ‘This flood channel, it’s an adaptation measure, but it can also be used for mitigation methods’ states Schouten (Interview, July 2015) showing how this project can improve future activities.



Figure 26: Nijmegen landscape project, showing the new canal and the development along the coast of the island in reality (left) and at the masterplan (right). Source: city of Nijmegen, n.d.

There are other cases where this approach has been developed in the Room for the River Programme. The landscape project of Noordwaard (Room for the River Programme) is an excellent example to illustrate other ways that hydrological efficiency and quality have been expressed. Noordwaard is located in an agricultural area (Fig.27) that tends to flood on various occasions. Also concerned to address water safety and spatial quality, this project aimed to celebrate nature and offer various activities to locals and visitors. Examined by this research due to its impact on the landscape and the region, as well as its different character compared to the urban scheme of Nijmegen.

The vision for this scheme is ‘Building with nature’ as Annika Hesselink, technical manager of the scheme, explained (Annika Hesselink, Interview, July 2015). The aim

is to deal with flood, however this project has adopted a different approach. Instead of designing a new channel for the water to flow (Nijmegen), the dykes will be partially excavated on the riverside and the dyke circle will be decreased, allowing the river to flow more rapidly out to sea during high water (Infographic depolderisation Noordwaard, Appendix 11).

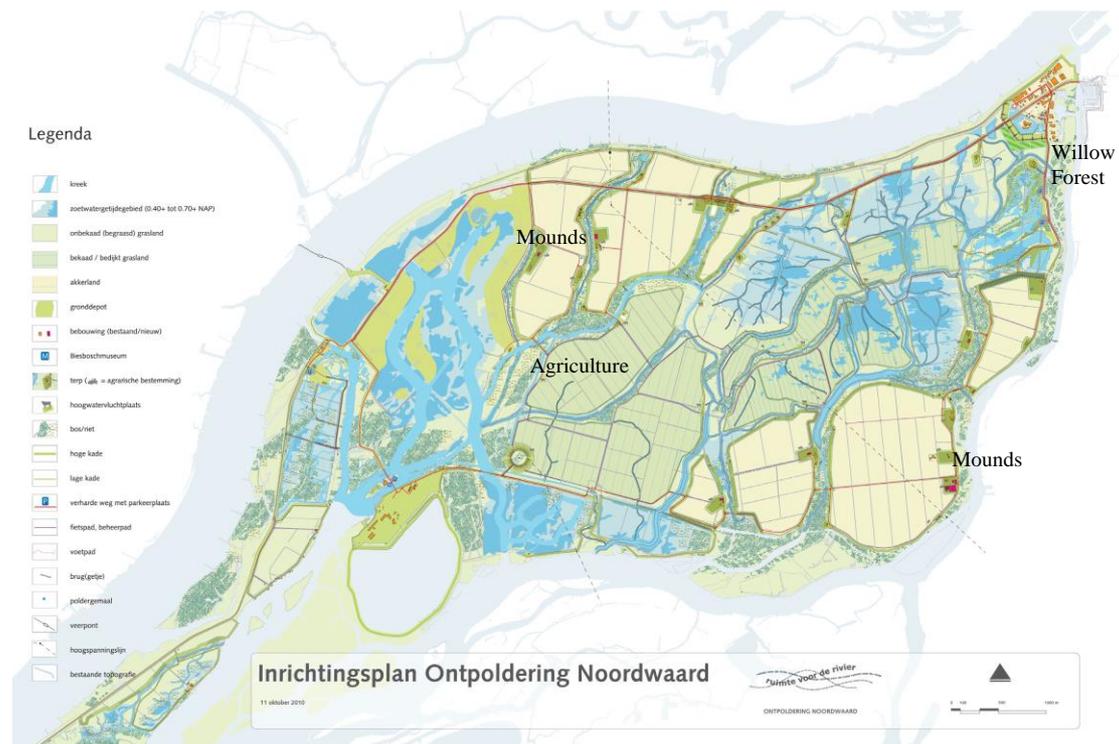


Figure 27: Noordwaard landscape project. Masterplan of the depoldering of the rural landscape of Noordwaard illustrating the water, agricultural areas and mounds where the housing has been established. Source: Annika Hesselink.

After the depolderisation the catchment area is under water several times a year. Figure 28 illustrates the impact on the area when the water level rises. With regular tide to flow from 40-70 cm and scenarios of flooding where agricultural polders (low-lying tracts of land enclosed by dykes) can be under 290cm of water, this scheme is a very bold design in a rural location that should be preserved. The design of the scheme is based on a sustainable plan (Annika Hesselink, Interview, July 2015) where the water inflow/outflow openings, the dyke reductions, residential areas, roads, bridges, nature

and agriculture have been considered (Appendix 9). It is an opportunity to create an attractive environmental resort where locals and visitors can get knowledge about the landscape as well as enjoy a quality environment. Designed with the aim to be developed as a natural area that can accommodate businesses and public (Annika Hesselink, Interview, July 2015) Noordwaard has integrated spatial quality elements to address this vision.

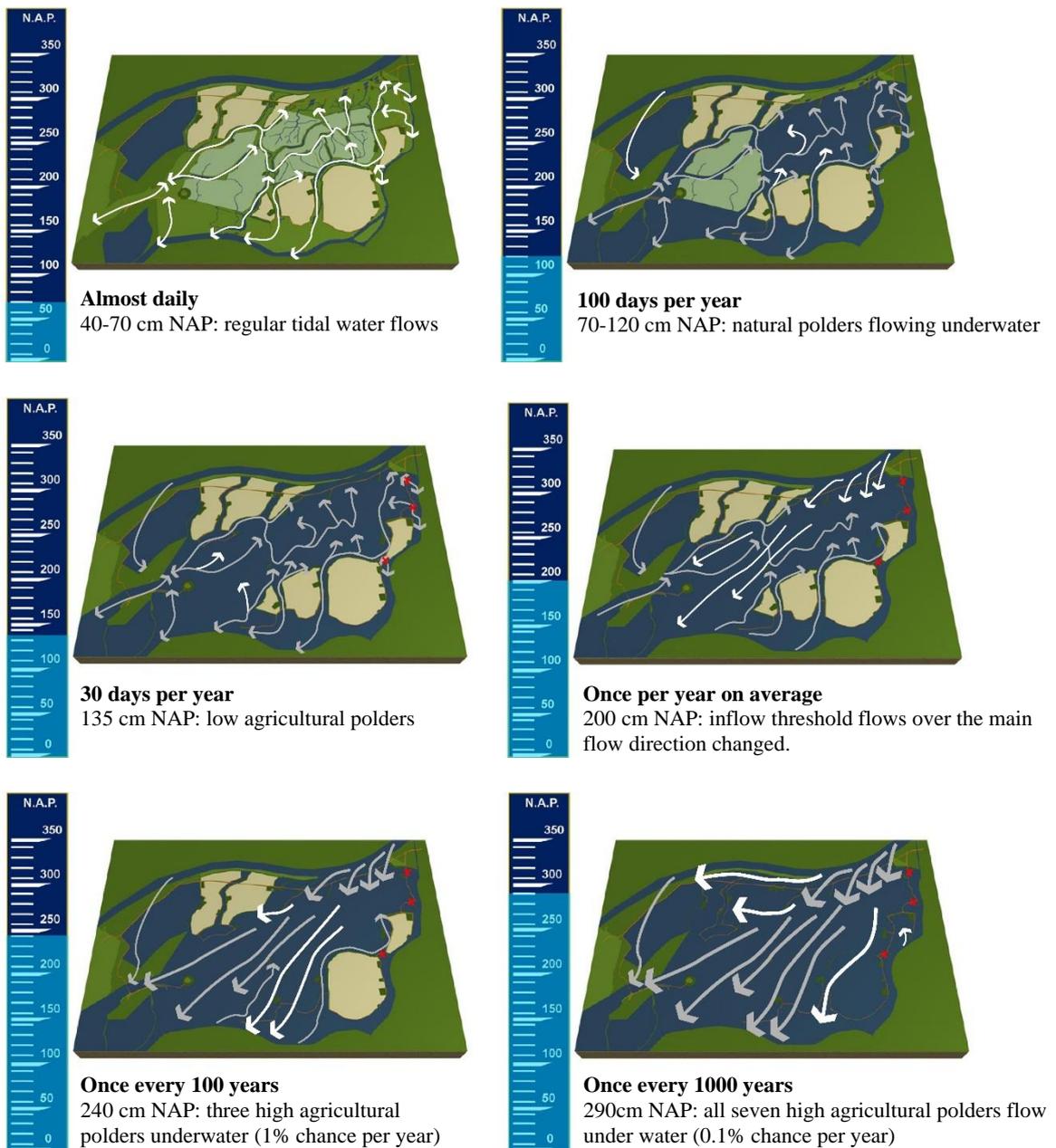


Figure 28: Water flooding scenarios provided by the Noordwaard technical team. Source: Annika Hesselink.

Being set within rural scenery, with agricultural land on the edges and grassland in the middle, a willow forest and historical monuments, offering cycling and boating activities Noordwaard creates a different environment while deals with water safety (Fig.29). The requirements established by the secretary of state for this specific location was indicating focus on hydrological efficiency, agriculture, inhabitants and spatial quality, such as the creation of a European nature network, recreation opportunities, strong identity for the natural park Biesbosch (Natura 2000) and Biesbosch museum, attention to the Fort Steurgat (cultural historical element) and a sustainable plan for future development (Noordwaard bureau – Ralph Gaastra, document provided by Annika Hesselink). Since landscape ideas can often be identified in different ways, successful projects develop their own interpretation for low carbon and sense of place, which falls into the broader rational of these ideas.



Figure 29: Visualisation of Noordwaard natural environment. The project has been designed to allow various boating, walking and cycling activities creating a quality and sustainable landscape while addressing water safety. Source: West 8 official website.

In this project, different spatial elements, such as observation areas, a willow forest, boating and cycling routes were used in order to express the vision of Noordwaard (Annika Hesselink, Interview, July 2015). The willow forest shown in Figure 30 aligns

with the concept ‘building with nature’ developed by the designing team of the Noordwaard project. As Hesselink explained, the forest was especially designed to act as a water buffer and lower dykes in order to enhance beauty and improve the landscape views (Annika Hesselink, Interview, July 2015). The willow trees are planted in lines (in the direction shown at Fig.30) to reduce the waves effectively, using two different species in case one of them is infected and destroyed. This in-depth analysis, the thorough design and the accurate transition of the ideas to spatial features, contributes to the successful implementation of the scheme, delivering water safety and aesthetic meaningfulness.



Figure 30: The willow forest of Noordwaard, Room for the River Programme. The forest is designed to protect the historical fort from flood, but also embrace the views of the area and enhance nature. Source: Robert de Konning, landscape architect of Noordwaard project.

Structures such as observation areas/pumping stations, bridges and ‘binding areas’ were deliberately added into the scheme as quality designs to enhance some of these approaches. For example, the ‘binding structures’ called ‘koppelstuk’ link the mounds, where the buildings are located, with the landscape area outside of the dyke (Annika Hesselink, Interview, July 2015). The ‘koppelstuk’ structures were intentionally given

a different appearance (Fig.31) to highlight the transition to the ‘less safe’ landscape, as somebody moves from the mound to the outside the mound – possible to flood area.



Figure 31: Drawing (left) and photograph (right) of the ‘koppelstuk’ element, designed to highlight the transition from one space to the other. This is considered as a spatial quality element. Source: Robert de Konning, landscape architect of Noordwaard project.

Examples on how the mounds work with high water levels are shown in Figure 32. Since the transition to the less safe/flooded areas is very significant for this project, the ‘binding structures’ were considered an important element that needs to embed quality.



Figure 32: Examples of the mounds, new housing areas and customized living areas illustrated by the Rijkswaterstaat (Ministry of Infrastructure and the Environment). Source: Document by Martin Hoenderkamp, provided by Annika Hesselink.

Structures such as the ‘Gemalen’, fall under the same design concept, dealing with both function and spatial quality. They are pumping stations regulating the water level

(Fig.33). Annika Hesselink explained that three out of the twelve pumping stations (gemalen) were designed as ‘recreational elements’ to give the opportunity to the visitors to see the view from their terrace (Fig.34), contemplate, see the open landscape and understand the scale of the overall project (Annika Hesselink, Interview, July 2015). These were examples of quality identified by the project team and therefore the quality is represented by their placing to the landscape, their architectural design and materials used and in some cases their functionality or multi-function.



Figure 33: Pumping station known as ‘Gemalen’. Structures functioning as pumping stations while the same time enhance spatial quality as they have been designed as observatories. Left: example of a gemalen pumping station. Right: the view from the same structure overlooking Noordwaard. Designed by West 8.



Figure 34: Visualisation of the pumping station known as ‘Gemalen’, demonstrating the use of the terraces by locals and visitors in Noordwaard. The structure provides a quality element that enhances community engagement with the landscape. Designed by West 8. Source: West 8 official website.

Similar concepts integrating sense of place and quality have been used in other structural objects of the project. Figure 35 illustrates the siphon on the innovative dyke, developed for the protection of the historical Fort Steurgat, where the function is ‘celebrated’ and materials have been carefully thought. As Hesselink stated ‘don’t hide it by other things, but make it visible [..]. So sometimes things are better if you can see the function’ (Annika Hesselink, Interview, July 2015).

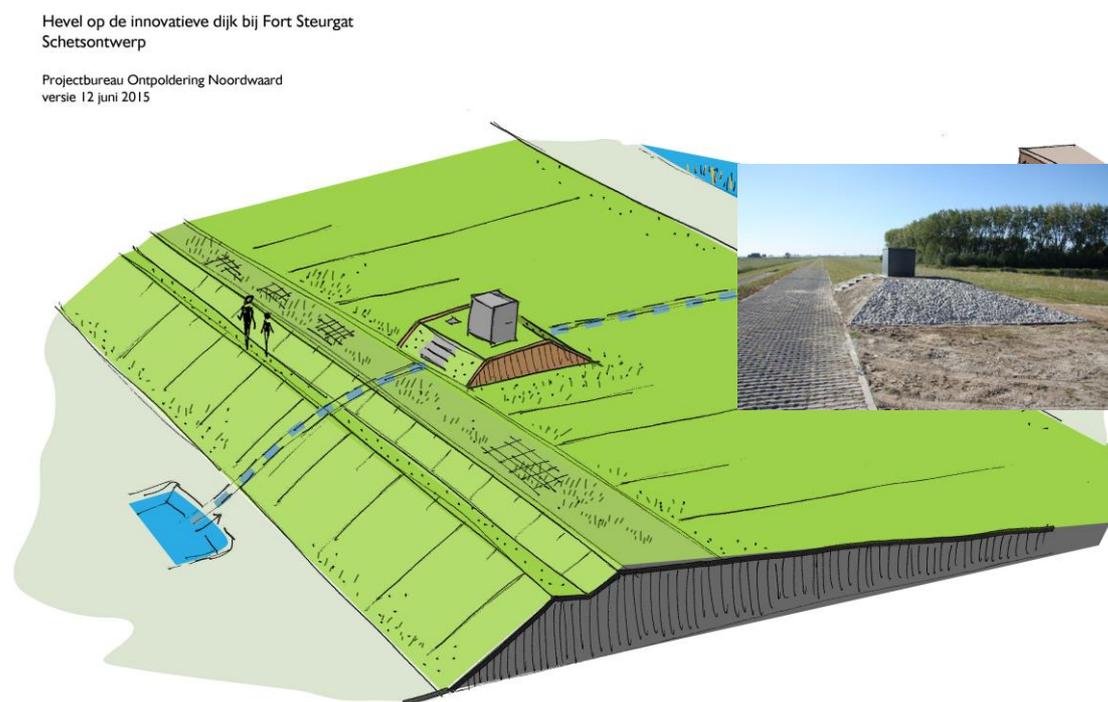


Figure 35: Small siphon located at the landscape project of Noordwaard. Graph and real image illustrate the vision and the implementation where design considers function but also the integration to the landscape. Source: Robert de Konning, landscape architect of Noordwaard project.

Based on the data presented above and the drawings/images collected during the field visits, it can be argued that the concepts of low carbon and spatial quality have been carried through from the conceptual design of the regional scale down to the implementation of the local scale in the case study schemes. This is interesting as such intangible elements are often being overlooked during the design and project process

and it is very important to have examples demonstrating the spatial interpretation of key landscape concepts on large-scale infrastructure.

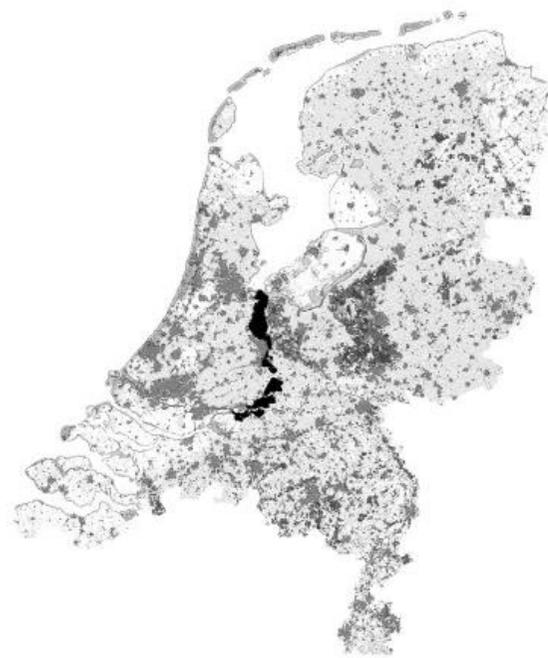
This section will move on to the second national scheme, the New Dutch Waterline also shaping a different approach. This scheme is defined as an 80km landscape park build upon the history of the Dutch Waterline, where a holistic approach had to be established. Aiming to preserve historical sites as well as create new uses, the programme of the New Dutch Waterline has revitalised the landscape by ‘redesigning’ and transforming a series of old fortresses to areas of cultural restoration, touristic sites, entertainment venues, natural and historic areas. Figure 36 reveals the open spaces of the defence line shown earlier (Fig.18), and presents the areas that were inundated during the war, revealing the scope of the project and the impact on the wider landscape. The aim was to regenerate the broader area around the fortresses location, creating a sustainable and quality space.



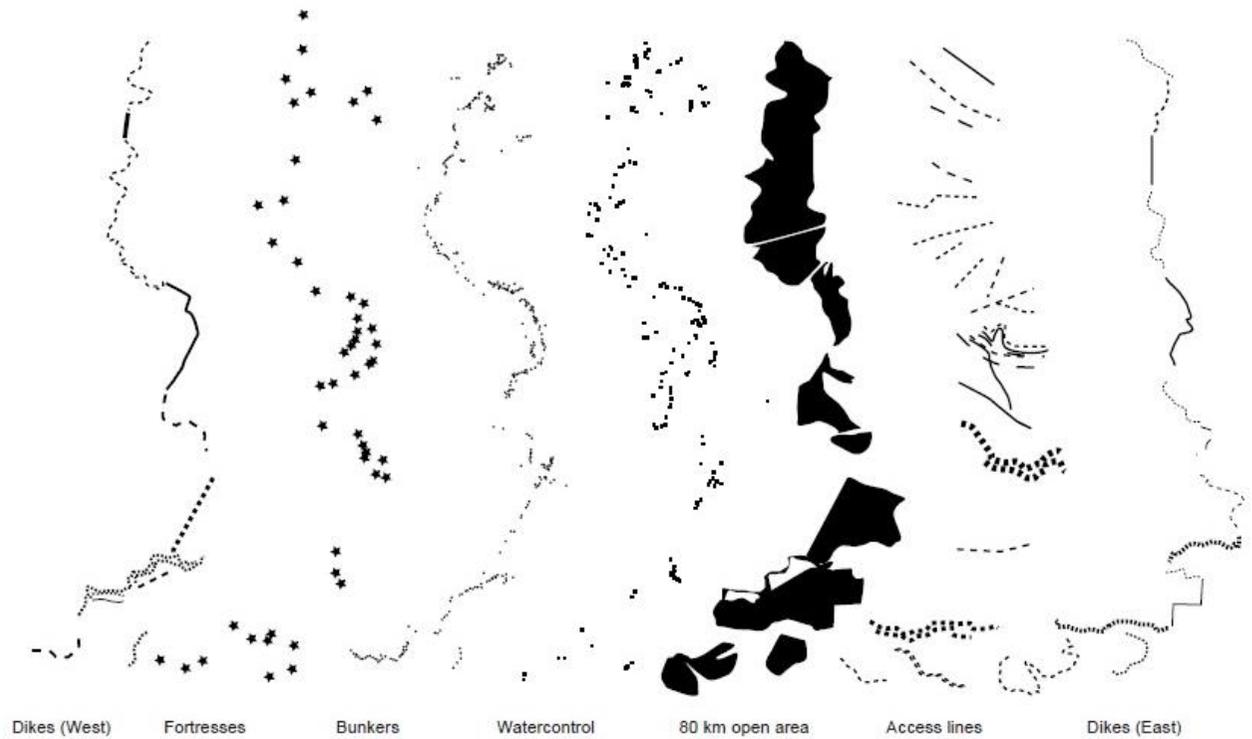
Figure 36: Drawing showing the broader area around the New Dutch Waterline that it was transformed during the development of the national landscape scheme. Source: Bugter et al. (2015).

The exposure of this part of Dutch history has been based in exploration and development of the landscape around it, impacting on local and regional economy. As this is the ‘largest engineering work in the Netherlands’ and ‘a gift from history’ as Sijmons explained, the regeneration and preservation of such a scheme was important (Dirk Sijmons, Interview, July 2015). The New Dutch Waterline addresses challenges, such as the use of old inundated areas, the sweet water on the polder level and building regulations across the defence line (Dirk Sijmons, Interview, July 2015) and therefore relates to climate change, low carbon and sense of place in a different way from the Room for the River. Preserving an existing infrastructure with great historical, monumental and environmental elements (Fig.37), the scheme has been nominated for a landscape award from the Council of Europe and is on the tentative list of UNESCO for 2019 (https://www.youtube.com/watch?v=fF_nES_LRHA, Appendix 4).

Enabling controlled inundation, as the original scheme was planned to do, is based on a sophisticated landscape engineering process that originated from the 12th century. As a result, the ideas of sustainability and low carbon of the New Dutch Waterline equate to water management as well as preservation, agriculture and nature, when at the same time design elements are integrated to transform the individual locations from military bases to destinations and enhance quality of place. Sijmons explained that ‘we had to convince everybody that this was a fantastic project to do it together. Because it was for a long time completely invisible. Yes, [they] knew there was an old fortress over there, but this was completely derelict’ (Dirk Sijmons, Interview, July 2015). The Board of the New Dutch Waterline has stated ‘the legacy of the Dutch military history has become valuable public space, adding a highly appreciated identity to the region and is a truly unique landscape’ (Muilwijk, 2015).



New Dutch Waterline becomes a landscape park for the 21st century at the East side of the Randstad (80 km)



Dikes (West) Fortresses Bunkers Watercontrol 80 km open area Access lines Dikes (East)

Figure 37: Design of the New Dutch Waterline on a regional scale unpacking the different elements of the scheme such as dikes, fortresses, bunkers and open areas. Source: RAAAF.

The New Dutch Waterline is another example of a national scheme spread across the country, where individual landscape projects materialise low carbon and sense of place in various ways. The examples presented below will show what these concepts mean for the landscape and what the impact to the region is. The variability of this scheme is quite impressive as it is all based around the old defence line, when the same time unique recreation places have been developed. One of the most significant projects of the scheme is the ‘Bunker 599’ located near Culemborg (the Netherlands). In this project, designed by RAAAF and Atelier de Lyon, an actual military bunker has been split in two (Fig.38) aiming to reveal and make accessible an important part of Dutch history. By ‘sharing an experience’ with the visitor (Niek Hazendonk, Interview, July 2015) the project defines quality integrating it with the historical importance of the area. Being visible from the Amsterdam-Maastricht highway as well as to cyclists and pedestrians who cross the area, the project’s goal is to draw attention and awaken memories and thoughts.



Figure 38: Designed by Atelier de Lyon and RAAAF the open ‘Bunker 599’ is located across the New Dutch Waterline aiming to make visible and accessible an important part of the Dutch history.

Giving the opportunity to see its interior (Fig.39), which is normally cut off from view, is a way to bring back emotions and make history tangible and accessible to locals and visitors as was explained by senior policy officer Hazendonk, during the field visit (Niek Hazendonk, Interview, July 2015). A long wooden boardwalk cuts through the bunker and leads to a flooded area, enhancing sense of place while the same time emphasizing environmental stability. As the Board of the scheme and the designers explain, ‘the boardwalk leads visitors to the footpaths of the adjacent natural reserve. The pier and the piles supporting it remind them that the water surrounding them is not caused by the removal of sand but rather is a shallow water plain characteristic of the inundations in times of war’ (Mulwijk, 2015). Using existing structures in a contemporary way, the designers have managed to spatially illustrate some of the key characteristics of this time in history and pass an environmental message.



Figure 39: Interior of Bunker 599 pointing at the flooding area. Source: Allard Bovenberg - (Mulwijk, 2015).

Fort Werk aan't Spoel is another example of the New Dutch Waterline national scheme (Fig.40), that even though it aligns with the overall aims of conservation and historic preservation of the programme it has different uses and goals. The project has identified the ideas of sustainability and spatial quality in a different way. Hazendonk explained during the field visit at the Fort Werk aan't Spoel, that the scheme preserves the former military elements, bunkers, bomb-proof buildings and old inundation locks (Niek Hazendonk, Interview, July 2015). The new fort house operating as a restaurant and a 'landscape amphitheatre' (Fig.40), take inspiration from the past monuments, transforming a historic area to a social space, offering a wide variety of indoor and outdoor activities.



Figure 40: Fort Werk aan't Spoel. Old and new development combines historical and leisure areas. Source: Rob't Hart (Muilwijk, 2015).

As Muilwijk (2015) explains, this example 'forms a new type of public domain and has become one of the main attractions in the New Dutch Waterline'. The project is merging sustainability with landscape quality, while the same time improving quality of life and social engagement. Spatially, it has kept the old monumental elements,

aligning them with new design elements that highlight the past and point at the future. It is considered as a good response on the investigation of this research looking at ways the concepts of low carbon and spatial quality are embedded in the landscape projects. Interesting examples are also the Fort bij Vechten (Fig.41), base for the water museum 'Waterliniemuseum', and the Fort aan de Klop (Fig.41). Both projects are based in unique locations on the outskirts of the city of Utrecht blending nature with history. Fort Vechten and the water museum have an educational role on water where visitors can learn about the Dutch waterline and also experience the unique landscape wondering around the fort and the military bunkers (Annemiek Tromp, Interview, July 2015). The 'bomb-free' Fort aan de Klop in contrast, has been transformed into a welcoming place, used for events, conferences and other festivities. Exploiting its hidden location, the visitors 'enter to a completely different world, a place that once was a safe heaven for soldiers is now a comfortable place for guests' (Muilwijk, 2015). Structures, natural features, design ideas and uses of these projects are partly different to previous examples showing how the flexibility of spatial quality and sustainability can be materialised into various elements and engage the community. Overall, the New Dutch Waterline is a national landscape scheme with a positive impact on the local and regional economy. Muilwijk states that 'by preservation through development, a sustainable future has been ensured for this military landscape that now stars on the Dutch list of UNESCO World Heritage' (Muilwijk, 2015).



Figure 41: Left: Fort bij Vechten/Waterlinie museum showing the river movement in the Netherlands. Right: Fort aan de Klop illustrating community engagement and uses of the project.

4.4 Key findings on low carbon and spatial quality concepts

The exploration of the case studies reveals that the concepts of spatial quality and low carbon are flexible in their understanding and interpretation. The creation of a landscape vision can often enhance the establishment of these intangible ideas because it allows them to equate with something more tangible, through the exploration of the projects. Making the vision of a low carbon and quality landscape known and communicating such concepts to the broader audience often falls into a different process between European countries because of the variations in culture, country, discipline or project aims. But as the case study evidence has shown it raises awareness and has positive results for the schemes. Variability in these concepts was also expected, since landscape practice deals with a range of different areas, but the establishment of a landscape vision illustrating the potential for each area, helps the unique identification of issues such as quality and low carbon for strategic schemes in a way that suits its needs and its geographical characteristics.

This chapter has explained that low carbon in the landscape concept is ‘much more than the term can describe’ (Kate Martin, Interview, March 2015), highlighting the fact that

we are not just discussing CO₂ emissions and energy, but embracing a holistic idea of landscape sustainability related to quality of life, social and cultural characteristics and environmental values. Similarly, landscape quality can address a vision for the landscape and answer the question of what a place might become or what do we want from the landscape and the region. The Landscape Observatory, Room for the River/New Dutch Waterline and HS2/HS2LV strategic schemes deal with these ideas in a conceptual way aiming to disseminate them to the community and support public sectors in spatial design and planning. The three projects deal with these in different ways, however there is evidence of successful integration. The evidence is creditable because it includes data extracted from the interviewees, documentation and observations and assessments as part of the researcher's placement, as well as literature produced by the projects and about the proposals. Therefore, a key finding of this chapter is that much can be learned from current practice and that it is possible for innovative projects to inform the development of theory through.

Based on data collected at the pioneer cases it is suggested that the ideas of low carbon and sense of place can be spatially interpreted in different ways, therefore the possibility of finding surrogates that match the vision of a specific project and can materialise such issues should be encouraged throughout the process. The interpretation of these concepts should be fully connected to the landscape characteristics, vision, culture and economic development of the specific region as this has an impact to the engagement of the project by the community.

Examining the significance that pictorial forms had at the case study projects shown in this chapter, and their role on the establishment of the concept as well as the communication of the key issues for each area, this thesis argues that one of the most effective ways to convey a landscape vision is through drawings and often visual

materials. Conveying a message to individuals often demands specific graphic communication either through artistic language, master planning, images or any other pictorial form. The chapter has presented and discussed several examples of visuals that have been found during the case studies aiming to illustrate how these ideas have been expressed in each location. Drawings and visual representations play a major role at conveying these concepts and improving their 'spatial' understanding, fact that will be discussed in detail in Chapter 5.

Chapter 5

Drawings and communication in regional landscape based spatial strategies

5.1 Introduction

Drawings and visual representations have been presented in previous chapters as a way to illustrate the key ideas embedded in landscape projects. It has been suggested that concepts are best conveyed through pictorial forms and therefore the latter have a significant role in landscape strategies. This chapter is not an evaluation of drawings in the formulation of design, but an exploration of how drawings and visuals affect decision making and the communication process of a strategic scheme.

Through a series of sections related to the importance of drawings, the understanding of the land and the development of a vision, the chapter will demonstrate how visuals enhance communication and spatial interpretation of key ideas. Interview quotations, excerpts from observations and images will support the findings addressing the research questions. Data extracted from the case studies have been considered as a whole and therefore examples from all the three case studies will be found in the following sections.

5.2 The importance of drawings and the project process

A drawing would be a sketch, a technical diagram, a plan, axonometric, an image, a map, a 3D visualisation, hand drawn or digitised. This chapter is using the term drawings referring to more than one of these categories depending on the visual material that the landscape schemes examined have used. Drawings and other visual

material have been analysed to identify and explore effective ways of communication and investigate how visuals impact on the way in which we conceptualise regions. This section looks at the role drawings play in regional landscape strategies and how this might affect the project process. It also examines how drawings visualise concepts that are going to be used by the project process and how as part of a design proposal help communication of ideas to both the professionals and the public. Data collected from the three case studies will demonstrate how the pioneer strategic schemes have used visuals during the project development and the way that these have affected – or not – decision-making on the landscape scheme. During the researcher's placement at the live projects (case studies), preliminary, conceptual and final drawings of the strategies were examined, leading to observations regarding the communication of the key issues explored by this research. The importance and their engagement in the process of the landscape development was questioned and experts presented their views and experiences.

Moore (2003:8) states that 'rather than mediating between the conceptual and the visual, drawing can be seen simply as a way of working out an idea'. Pictorial forms often enable the user to gain better understanding of an idea or a proposal. Especially for landscape architecture and large scale schemes, the ability of spatial understanding is crucially important to the development of space. The research's approach aligns with current literature stating that 'for designers, drawing is a vehicle for design reasoning (making decisions, expressing ideas, verifying and evaluating proposals)' (Do and Gross, 1996:1). However, only exceptionally have projects applied such ideas in practice on a large-scale and this is the reason why the research investigated these processes in a pan-European level.

‘Drawing is an abstract interpretation of what is going to be reality’ states Jan van der Grift (Interview, July 2015), highlighting that visuals were a significant part of the project process for the Netherlands strategic schemes. Based on this, it can be argued that pictorial forms are somehow the predecessor of the real landscape scheme. Moving from the idea to reality, drawings can be a way to ‘sell’ and ‘promote’ the idea of a potential landscape scheme. Van der Grift suggests that ‘reality’ can change some of the visual elements, during implementation, and therefore a ‘drawing can only be an abstract interpretation of the final scheme’ (Jan van der Grift, Interview, July 2015). An effective pictorial form has the ability to change decisions about the project, to convey messages to viewers and to express the landscape vision. Drawings can make visible and bring to life forms, shapes and ideas before they are built. ‘Plans are conveying effectively what you want to build, the quality that you want to achieve’ explained landscape design technical lead for HS2 Ltd., Christoph Brintrup (Interview, January 2016). As Gary Woodward (Birmingham City Council) also highlighted, visuals have been proven important for the part of HS2 that deals with the West Midlands region. He made clear that drawings representing the HS2 station and surrounding area in Birmingham had a greater impact when they were published together with text (Gary Woodward, Interview, October 2015). This is very important for regional schemes, as the scale itself creates challenges in understanding the space. How this can be done successfully, though, relies on many elements, from expertise and skills, to vision and policies.

This demand on specific skills and expertise, as discussed at §5.4.2, seems to have pushed drawings to the sidelines of the landscape project process (Christoph Brintrup, Interview, January 2016). Interviews with experts (Sadie Morgan, October 2015; Jan van der Grift, July 2015, Dirk Sijmons, July 2015 and Christoph Brintrup. January

2016) reveal that the presence of visuals during the project process is either limited to the designers' team or not evident throughout the landscape project process, especially on large-scale developments.

Observations from the Landscape Observatory (Case study 1) and the Netherlands (Case study 2) show that drawings are a powerful tool and significant elements of the development of the landscape scheme. Despite the fact that both the Landscape Observatory, with the use of maps and the 'Landscape Catalogues' methodology document (Nogué et al., 2016), and the Netherlands with various design processes (Dirk Sijmons, Interview, July 2015; Mathieu Schouten, Interview, July 2015), are pioneer projects involving landscape graphics on strategic scale, it was discovered that in many cases drawings are replaced by text (HS2 project/Interview Gary Woodward and Dutch projects/Interview Annemiek Tromp), and pictorial forms by verbal ideas. It is also important to highlight that the larger the scale the more difficult it is for people to understand it (Laura Megias, Interview, June 2015 and Xavier Sabaté Rotés, Interview, June 2015) and therefore more important for pictorial forms to develop and play the role of communication tools.

Observations during the case studies, as well as interviews with experts, reveal that spatial understanding is very important, especially in strategic landscape schemes where decisions affect cities, regions or even countries. Henk Bouwman (Advisor to the ITC (Independent Transport Commission) on the impact on cities of the HS2) discussing about the HS2 development process, explained that as part of the preparation workshops they included questions such as 'what you want to be as a city for the next 15 years, and how HS2 can contribute to that' (Henk Bouwman, Interview, July 2015) in order to encourage the areas of potential development to build a spatial vision. This section suggests that in cases where pictorial forms have been used on a regional scale

as a method to enhance communication and direct public opinion, the project process had a better chance of successful outcomes.

Annemiek Tromp (Programme manager Rijkswaterstaat) during her interview (July 2015) questioned ‘how do you show things?’ How do you illustrate key issues in a landscape project and how many can understand them? Interviewees explained a variety of views on the best practice to express spatial ideas and the effectiveness of current practices. Data extracted from the innovative landscape projects show that the role of drawings in regional landscape schemes is fundamental, but yet only very recently adopted in practice (Annemiek Tromp, Interview, July 2015 and Jan van der Grift, Interview, July 2015). Although there is a ‘long tradition of using drawings and other pictorial forms as part of the design process’ (Purcell and Gero, 1998:390), the literature gives less information on the engagement of drawings during the decision making process for planning developments. Brintrup explained that ‘drawings create expectations’ and he added that ‘a good design quite often stands for communications, discussions, understanding [the] assessment [and] organisational side of things’ (Christoph Brintrup, Interview, January 2016). He also demonstrated the way the project process unfolds today, stating that ‘if we are not anchoring them as a requirement to design, [...] then these wonderful drawings will not mean anything [to the project]’ (Christoph Brintrup, Interview, January 2016). Documents and long lists, functions or goals expressed in a textual way, were used for years as the main dissemination method on large-scale schemes (Annemiek Tromp, Interview, July 2015). This might be an indication why, as Moore (2003) states, landscape drawings ‘are missing content’ and have ended up ‘being far from convincing’ aiming only for the standards necessary to complete the planning process. As a result, it can be argued that pictorial forms often lose their true role and therefore their importance in the

landscape process. Whether called visuals, pictorial forms or drawings, they are valuable for their ability to present something we are not able to see at the time, either because it is still under development, such as ideas (Jan van der Grift, Interview, July 2015) or because it is less easy to visualise it on a large scale (Xavier Sabaté Rotés, Interview, June 2015). Drawings help the individual to understand space and how this can develop, and this often impacts on the decision making of a scheme. Giving an example from the HS2 strategic scheme, Brintrup stated that ‘plans are helping in so many levels, internally when you are discussing things [...] to explain to colleagues what the importance of landscape is, so these things are important, but then it’s also important how to present them to the public’ (Christoph Brintrup, Interview, January 2016).

Past practices have taken the communication role away, using drawings only as illustration methods, and this has eliminated their presence in landscape design. This research suggests that through visuals one can bring design to life, not only fulfilling a list of tasks and functions, but understanding the land and creating future proofed schemes, by building a vision. Drawings and landscape design are intertwined concepts, able to reveal the landscape and develop a significant landscape proposal. An important observation that was confirmed by Brintrup during his interview (January 2016) is that visuals can also play a significant role in the communication of the project’s concept or narrative.

5.2.1 ‘Understanding’ the land through drawings; impact on the region

This section will discuss the importance of maps and visuals in the interpretation of land components and how this can affect the decision making and the landscape scheme. It will focus on how pictorial forms can change the way we communicate

conceptual ideas and landscape characteristics and bring new possibilities for spatial strategies. Examples from the case studies have revealed that pictorial forms (maps, drawings, sketches, diagrams) are used as a way to understand space, identify its surroundings and see the potential in a landscape development. The case studies consider this to be a significant role for pictorial forms and therefore a movement that has been embedded in their pioneer strategies; since being aware of the land is a fundamental requirement for successful development (Laura Megias, Interview, June 2015 and Irene Navarro, Interview, June 2015). Planning concepts focusing on the engineering side of a project can be limited in the way they reveal the rich character of the landscape. More importantly spatial infrastructure developments such as the HS2 scheme often point out the location plan and the engineering work undertaken (see Chapter 6) without really considering the land and its surroundings and how this impacts in both the new development and the region. As Henk Bouwman explained, in HS2 ‘we argue that they [cities and regions] should know what they can do’ and that the ‘what’ and ‘how’ are important and also relate with each location (Henk Bouwman, Interview, July 2015). That way he highlighted the fact that the regions near the HS2 railway should reveal and embrace their landscape character with the opportunity given by this infrastructure development.

The Landscape Observatory has published the ‘Landscape Catalogues’; instruments illustrating all of the landscape types of the region of Catalonia (Nogué et al., 2016). The Catalogues, based on a combination of map visualisations and text reveal the landscape character and its values, through a territorial analysis which, as the coordinator of the Observatory explained, ‘had never been conducted before on such a scale and consistency for Catalonia’ (Pere Sala, Interview, June 2015) and therefore it is considered unique for both its scale and methodology. The Landscape Observatory

has created seven Landscape Catalogues presenting the 135 types of landscape characters (Fig.42) within the region. This extraordinary work deals with physical, topographical and geographical characteristics as well as values and dynamics of scenery.

Els paisatges de Catalunya

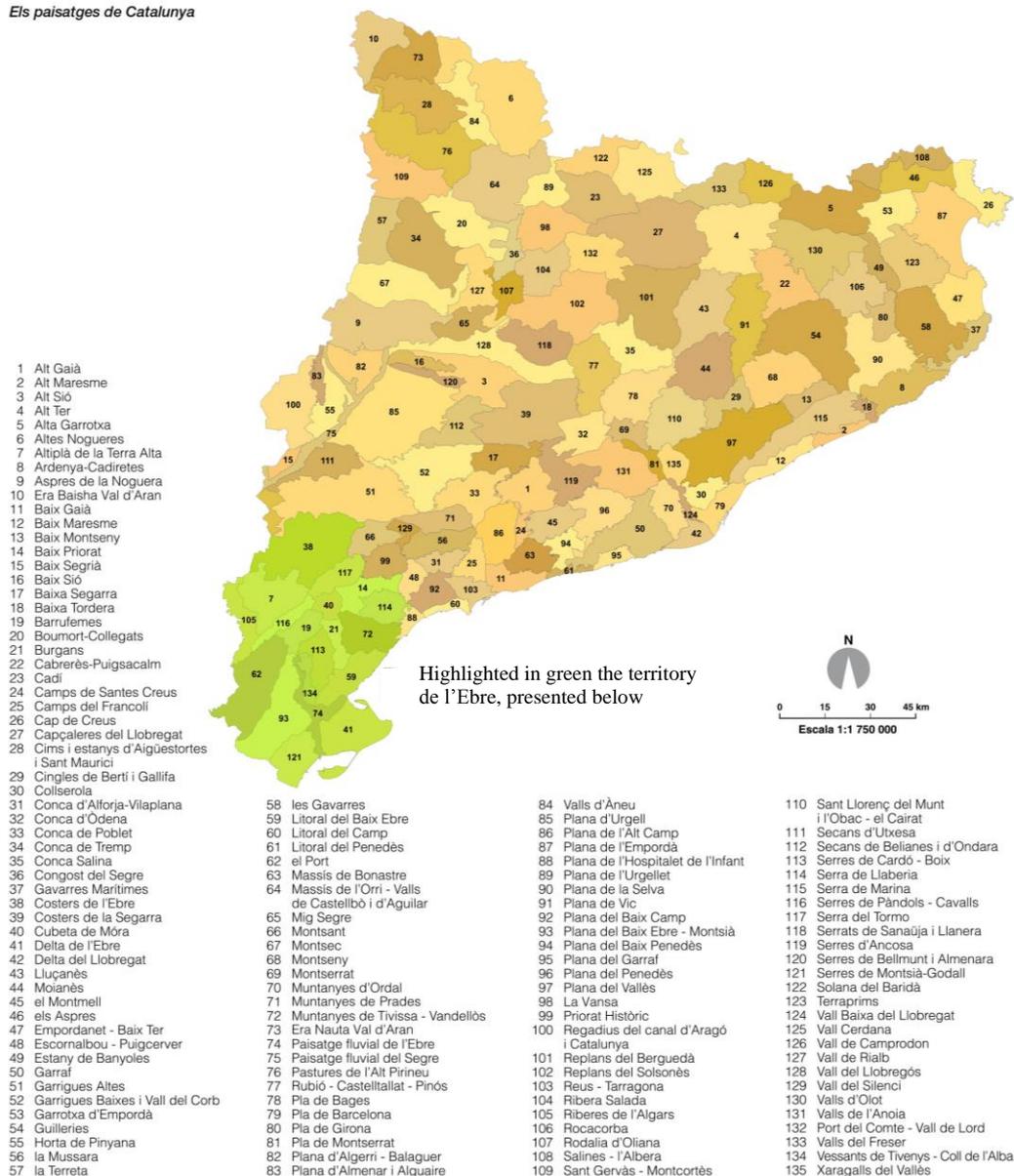


Figure 42: 'Els Paisatges de Catalunya'. Presents the 135 different landscape types of Catalonia characterised by the Landscape Observatory and located on the map for the region of Catalonia. Source: Landscape Catalogue de l'Ebre, p.29.

It is, as Nogué et al. (2016) state, 'the most successful instrument [...] on the protection, management and planning of the landscape' in Catalonia. The coordinator of the

Landscape Observatory, Pere Sala, explained that the Landscape Catalogues have managed to change perceptions for the landscape up to the level these are now used as tools in public and private landscape schemes, as well as from the governmental bodies of Catalonia as a guide for decision making and project development (Pere Sala, Interview, June 2015). As referred by the methodological document of the Landscape Catalogues, they have been proven so successful that have been approved by the 'Ministry of the Territory and Sustainability, Law 8/2005' (Nogué et al., 2016:25).

The Catalan landscape is expressed spatially, exposing information that is often less obvious without the use of drawings and maps. The examples presented below, included in the Landscape Catalogue of 'Les Terres de l'Ebre' (possessed during the placement at the Landscape Observatory), are a perfect illustration of how visuals help to reveal the characteristics of the land and to better understand the landscape. This is considered important for any infrastructure development, as it demonstrates that strategic schemes are often spread across a range of different landscape characters and therefore any potential landscape project needs to consider and adapt to a variety of topographical and cultural elements. Through a combination of maps and drawings, the examples of the 'Les Terres de l'Ebre' catalogue illustrate natural elements, ecological and geographical characteristics as well as social values, quality and historic areas, viewpoints and dynamics of the landscape. These visualisations reveal the diversity of the landscape and how important the understanding of key issues can be to the development of a project. Especially in cases of strategic scale schemes, the designers need to consider the variety of landscape characters (Fig.42), aiming for a project that will exploit the land and will create sustainable and quality areas.

Drawings and maps are able to allow the designer and the public to understand, analyse and communicate the character of the area, get a sense of topography and direction (the

North, the South, the East and the West) (Fig.43), almost ‘feel’ the wind and the light as well as ‘discover’ valleys (Fig.44), areas of deprivation and natural characteristics.

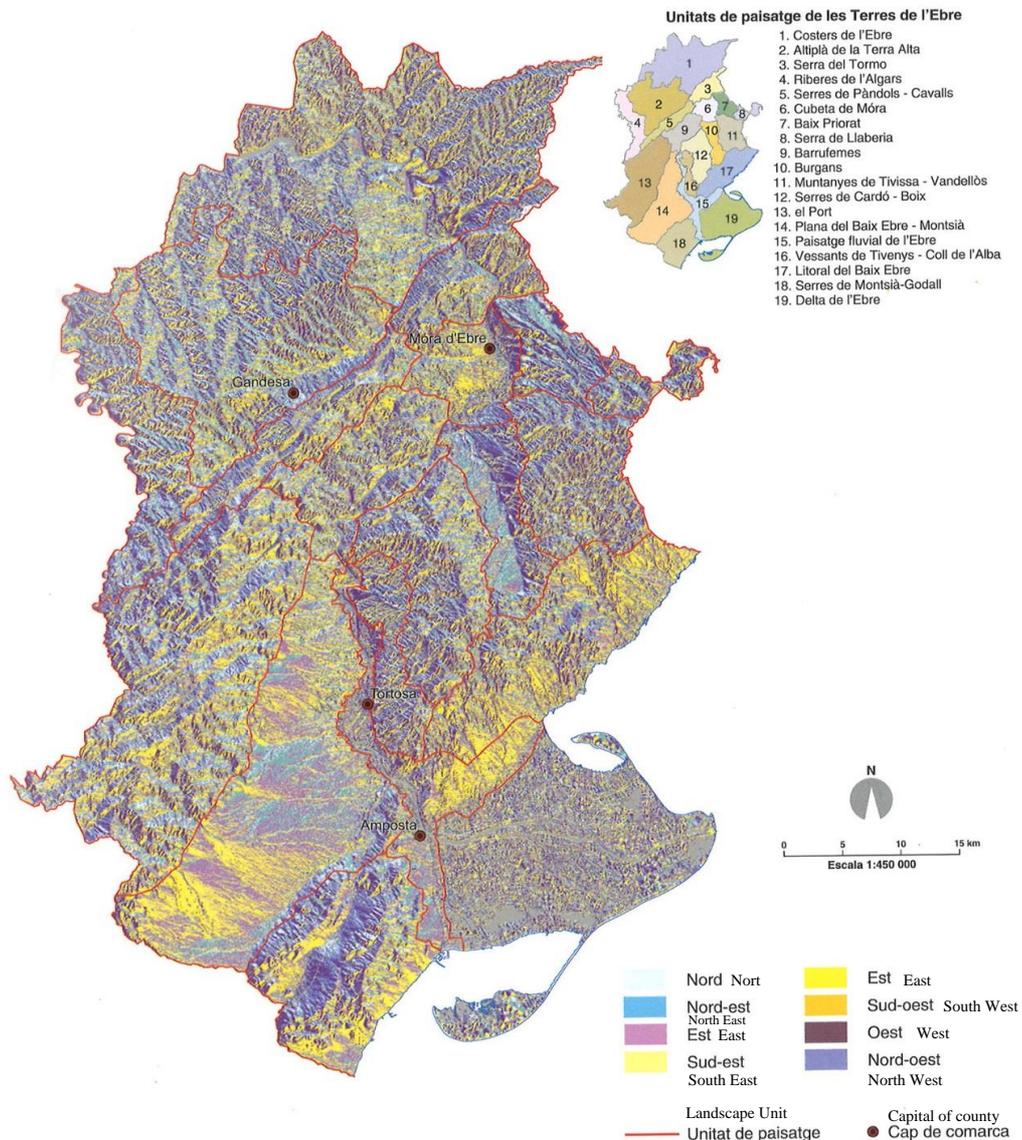


Figure 43: Map of the ‘de les Terres de l'Ebre’ territory showing the landscape units (top right) revealing topography and orientation (north, south, east, west). Giving a 3D perspective of the area by illustrating the high points, together with the geographical characteristics, the map expresses the character of the area and allows the reader to gain a sense of direction and a sense of wind and light based on the information revealed by the visualisation of the mountain range, such as direction of sun and valleys. Source: Landscape Catalogue de l'Ebre, p.41.

Moore explained during her interview that ‘visuals are more compelling as well [...], are much more evocative of the sort of place that we want’ (Kathryn Moore, Interview, June 2016). For example, Figure 43 demonstrates the topography of the area revealing the valleys and high points and expresses the orientation and sense of direction by

highlighting the areas that face north, south, east and west. That almost creates a feeling for the wind, direction of the sun, temperature, altitude of the area, exposure to climatic conditions and quality of the landscape when someone wanders around the valleys or mountains illustrated in the map (Fig.43). Figure 44 also illustrates the topography of the area, expressing the altitude, the hydrology and slopes, and communicating the diversity and richness of the landscape much more effectively than a text. ‘There is somehow this idea that if you get people a list of bullet points, that conveys exactly what you are talking about, and it just doesn’t at all’ states Moore (Kathryn Moore, Interview, June 2016) highlighting the effect of drawings in strategic developments, especially in cases of expressing ideas or illustrating landscape characteristics.

Figure 45 is another example of what understanding space by drawings means and how this is related to regional landscape schemes. The four images represent the same part of the ‘les Terres de l’Ebre’ territory (one of the Landscape Catalogues) illustrating social values (e.g. recreational areas, climbing routes, ports, museums and controlled fishing areas), symbolic and spiritual values (e.g. religion areas, monasteries, historic monuments and important agricultural fields), patterns and elements that create aesthetic values (e.g. woodlands, cliffs, coasts, green belts, agriculture and agroforestry mosaic), dynamics and characteristics of the area (e.g. rivers, deltas, urban and industrial areas, forests and agriculture) as these have been identified by the Landscape Observatory. The Catalogue uses maps, images and paintings to express elements that are often presented in a textual way, aiming to improve understanding and raise awareness of the landscape. Those ideas and characteristics cannot be conveyed solely verbally and visual material such as Figures 44-45 can express the detail of the landscape. The knowledge provided by such visualisations can enhance the value of the land and impact on the development of the region.

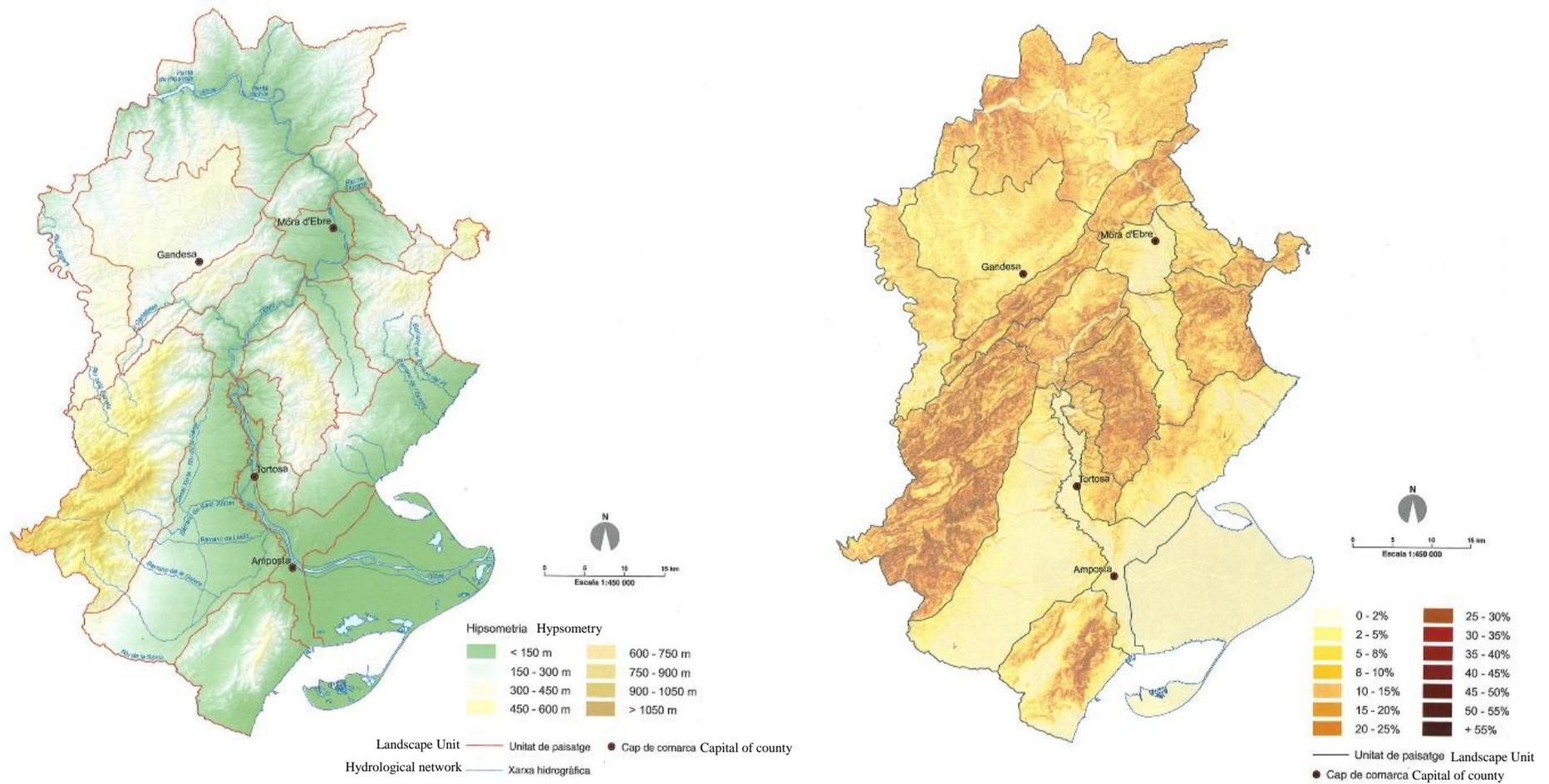


Figure 44: On the left, hydrological map revealing the main streams of the territory while it also shows the altitude, mountains and valleys of 'de les Terres de l'Ebre'. On the right, gradient map of the same territory. Such information can be useful for the better understanding of the environmental characteristics of the area (water, vegetation) as well as the other elements (altitude, slope) that are necessary in potential developments. Source: Landscape Catalogue de l'Ebre, p.42, 46.

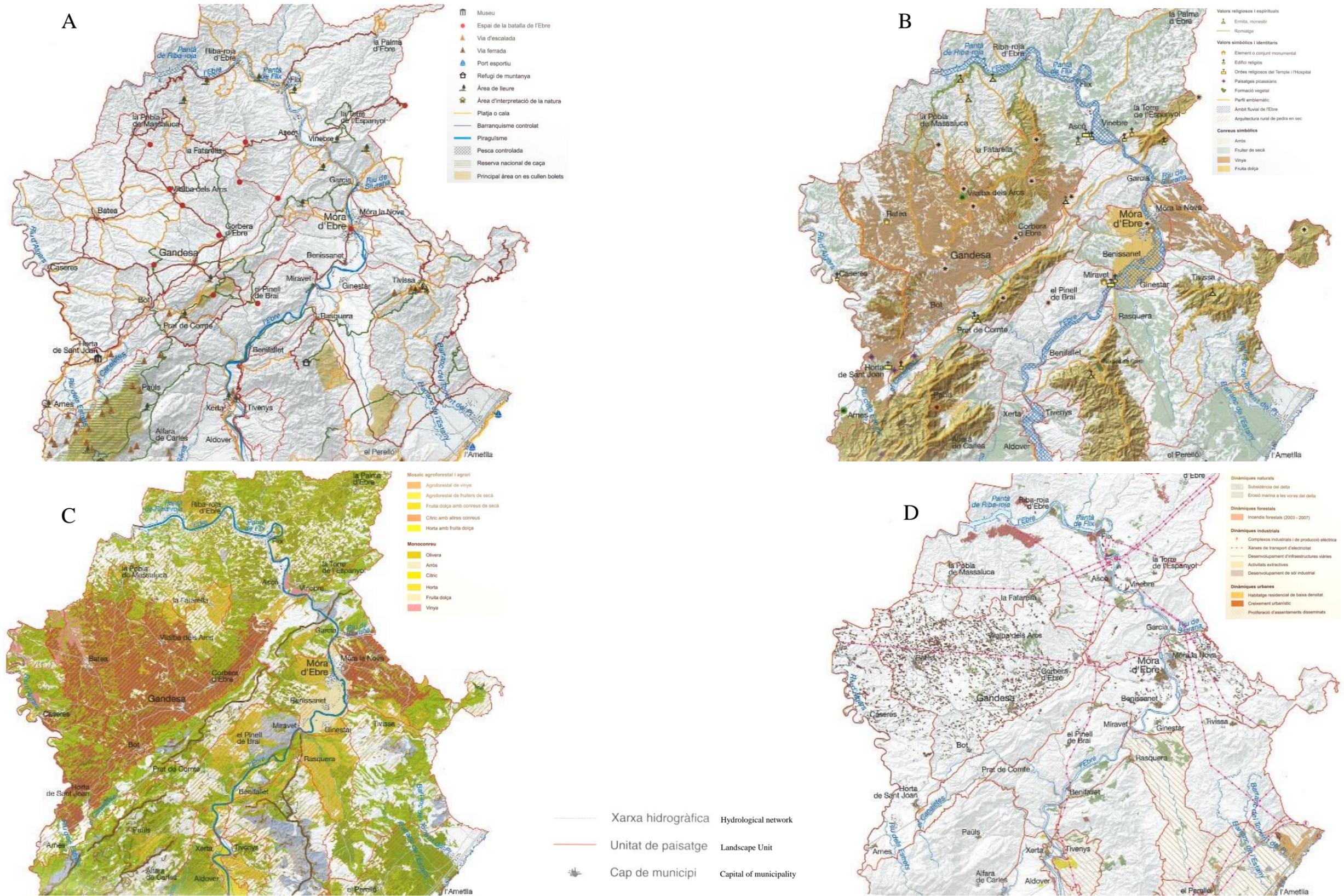


Figure 45: Part of visual illustrations of the 'de les Terres de l'Ebre' territory showing social values (A), symbolic and spiritual values (B), aesthetic values (C) and dynamics/characteristics of the area (D) as identified by the Landscape Observatory for this area. Source: Landscape Catalogue de l'Ebre, pp. 68-69 (D), 106-107 (C), 126-127 (B), 132-133 (A).

The 'Notations on a River' painting (Fig.46), created by the artist Julia Ricketts, is a different example of how one can better understand the land through drawings and it was retrieved from the archive of the Landscape Observatory. It was not created by the Observatory team, however the team evaluated it as a 'style of drawings' that could be used in future visualisations and projects of the institution. The researcher draw inspiration from the graphic representation of the 'Notations on a River', during her placement at the Observatory and therefore it is considered significant to present here. The painting has a different style of landscape representation and as Harmon (2004:189) explains, it 'adopts an aerial viewpoint to explore the visual intersections of natural and man-made forms. The mapping elements laid onto the landscape allude to the human tendency to quantify and divide land, and frame a scene both scenic and utilitarian'.

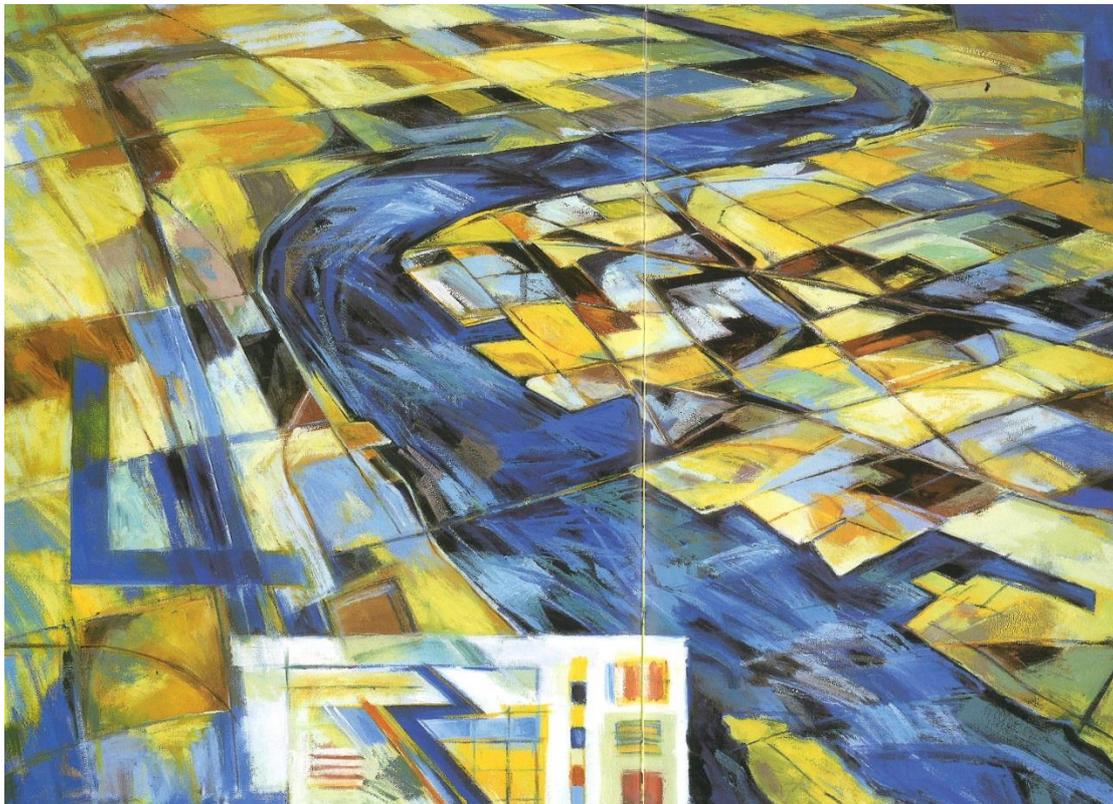


Figure 46: Illustration of the different types of landscape expressing natural and man-made areas. Julia Ricketts, 'Notations on a River', 2001. Oil on canvas, Seattle. Source: Harmon (2004).

Even though Figure 46 might relate more to an artistic drawing compared to the map-oriented drawings presented earlier (Figs.43,44,45) it is also able to express the spatial dimension of the landscape, introducing topographical characteristics of the area (e.g. orientation and altitude) and environmental elements (e.g. hydrology, agriculture), showing that different types of drawings can also be effective in identifying and representing the landscape characteristics. Observations and visual representations presented by this section demonstrate that the region can be better understood through drawings and therefore that this might impact on the potential development of the landscape scheme. Pictorial forms help both the ‘designers - developers and the public to trace the landscape’ (Bart de Zwart, Interview, July 2015), communicate concepts not easily identified such as spiritual, social and aesthetic values and often form decisions about a landscape project based on the characteristics expressed through the drawings.

5.3 Concept - vision - narrative

A good narrative may make the story of a book interesting, engaging and readable, but what in landscape projects has the same effect on design and sense of place? The ‘design concept’ for landscape, as it also might be called, can describe the story of a place, make it inspiring, attractive and appealing to visitors and locals. Sadie Morgan discussing the impact of the narrative explained that ‘through careful persuasion and a really good clear narrative, and good news stories [a strategic scheme] can become a national success story’ (Sadie Morgan, Interview, October 2015). The case studies demonstrate that a concept can be presented visually, but the landscape process needs to be perceived in a different way than it is today, blending drawings with text and ideas with pictorial forms. Current but limited literature supports this, stating that ‘design

thinking should be a part of creating the vision and designing the brief for a new project’ (Design Council, 2012). Through a series of interview quotes and visuals this section aims to establish the need for the narrative (HS2/HS2LV), demonstrate a successful way to build it (Netherlands) and present the fundamental ideas from which a concept can start developing (Landscape Observatory) (Fig.47).

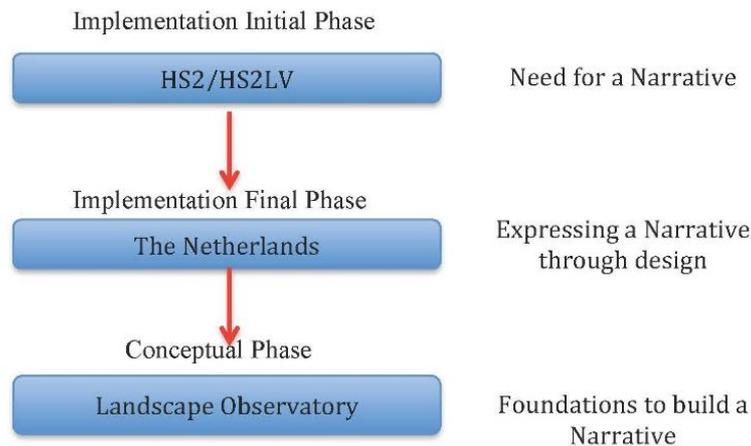


Figure 47: Diagram illustrating the need and implementation for a landscape design narrative together with the main steps for its achievement as it was perceived by the researcher during the field visits.

A narrative is usually seen as a process based on words and text and therefore is rather challenging to spatially interpret it. But as Moore explained, during her interview about the HS2 scheme, ‘a narrative comes to a spatial vision [...] and there is a need to share spatial vision on large-scale schemes’. So to get to the point [...] where you can actually contribute resources and land and whatever it is, to work together, you need to understand what you are aiming to’ (Kathryn Moore, Interview, June 2016). ‘There is a process by which first of all you capture the imagination and then slowly down the line you pull it into something that becomes a reality’ states Sadie Morgan (Interview, October 2015) discussing about the effective communication of a narrative. These ‘enhancing the imagination’ or ‘creating a vision’ techniques are known to landscape

architects and experts who deal with spatial design, thus it is argued that they can be expressed through visual elements or as a blend of drawings and text.

The section examines the steps that pioneer projects have followed to integrate a concept to their landscape project, establish and communicate a narrative through drawings. During the exploration of live projects (Landscape Observatory, the Netherlands and HS2/HS2LV, Section I §3) key concepts were identified and the way they built a storyline for the project and a vision for the area was examined. With regards to interviewees' responses, the landscape narrative is a term known and used by the experts (Henk Bouwman, Interview, July 2015; Sadie Morgan, Interview, October 2015 and Kathryn Moore, Interview, June 2016), however it is often not evident in the delivery of the project, either because it is not thought carefully, communicated correctly or because its role is not valued. And so, whilst the narrative/concept is necessary and important, it is somehow lost or forgotten as the implementation of the project unfolds. 'The need for a proper kind of branding, for a narrative is massive [...]' states Sadie Morgan (Chair of the Design Panel HS2) considering the landscape development of the major scheme of HS2, while she emphasises that is 'absolutely important to tell the story correctly' in order to be able to move a large-scale project forward (Sadie Morgan, Interview, October 2015). 'A narrative that is more convincing [...] it's a way to positively engage with communities, rather than always being defensive' states Moore also highlighting the importance of the narrative on strategic schemes like HS2 (Kathryn Moore, Interview, June 2016). It is the same need for concept that Henk Bouwman highlighted during his interview on HS2, reasoning how this will help the project development, explaining that 'the narrative is necessary in the long term, it's important, because people have to feel

comfortable with the story, it needs to be their story [...]’ (Henk Bouwman, Interview, July 2015).

Based on the evidence presented above, this research suggests that the narrative is a real need for a landscape project that helps develop a story in which the region can build upon a vision. The landscape concept is even more important on large-scale strategies since it is more difficult to understand the land and overcome challenges in such a scale. Drawings can enhance the project process, make the concept stronger and communicate the narrative in a visual way. As Bouwman explained ‘the narrative is important and should be accessible [by] any means of communication or expression and goals’ (Henk Bouwman, Interview, July 2015). This research suggested that drawings can improve spatial understanding and communication, and Bouwman emphasizes that a narrative also needs to be well communicated, therefore it can be argued that drawings can play an important role in the establishment and interpretation of a narrative to design. Supporting this argument Magalhães and Providência (2013) explain that ‘through its functions in supporting and stimulating the idea, throughout the project, drawing contributes to the idea’s development in accordance with the stratified process of design’. It can be the link that brings the ideas together and communicates the key concepts to a wider audience.

The example of the Landscape Observatory also demonstrates that the focus on the concept, community engagement, cultural, topographical and geographical identification of a specific area (Landscape Catalogues §5.2.1) as well as the development of a conceptual strategy, result in an effective landscape story. Therefore, it is suggested that the foundations for an interesting and inspiring narrative are key ideas that connect the cultural, social, historical and natural elements and are expressed through visuals creating a story that bonds the landscape project.

The Netherlands case study is a successful example of a narrative that has been expressed through drawings together with text, allowing it to be developed and transformed during the process. Both the Room for the River and the New Dutch Waterline have embedded landscape drawings into their design, public engagement and implementation processes, aiming for better communication and visualisation of the landscape ideas (Dirk Sijmons, Interview, July 2015). The Room for the River is a programme which, from its initiation, was based on visual engagement building on the ideas of a new river zone, climate adaptation, water safety and spatial quality. During its early stages, the Room for the River had specific phases where visual material and drawings were given importance either by allowing the designers to work and suggest different ideas or by introducing the visuals to the public. Dirk Sijmons who was State Advisor in the Netherlands during the development of the Room for the River Programme emphasised the fact that the close connection with the designers was a key to the progression of the programme (Dirk Sijmons, Interview, July 2015). The ideas and the scheme's concept were developed together with the designers from the regional to the local scale, based on the story of water safety and future proofing of the Netherlands. Following the story unfolding through drawings on how the rivers are going to provide quality and safety (Figs.48,49,50) as well as the project brief, a new vision is revealed for the region. Using this information provided by Dirk Sijmons, it can be argued that drawings are able to build a picture for a current or future situation of the landscape, engaging with the designer's ideas while the same time establish effective communication with the audience.

Figures 48, 49 and 50 were developed during the conceptual phase of the Room for the River programme and reveal the scale of the whole strategy, identify main topographical, geographical and environmental characteristics of the location where the

scheme was going to be built. The three drawings tell a story about water levels, climate adaptation and water flows, and they also explain key ideas of the Room for the River Programme as they show the broadened river zones (Fig.48), the new rivers (Fig.49), as well as the main urban water nodes (Fig.50). This is an example of how a narrative can be visualised and where the emphasis was given on the first stages of this programme in order to communicate the goals and engage with the community. The researcher's evaluation which is based on Sijmons's interview, but also on the examination of the Figures 48-50 and their place in the projects supports the statement that a story can be created for a landscape scheme representing a process as to reflect to an overarching set of goals and values for the project.

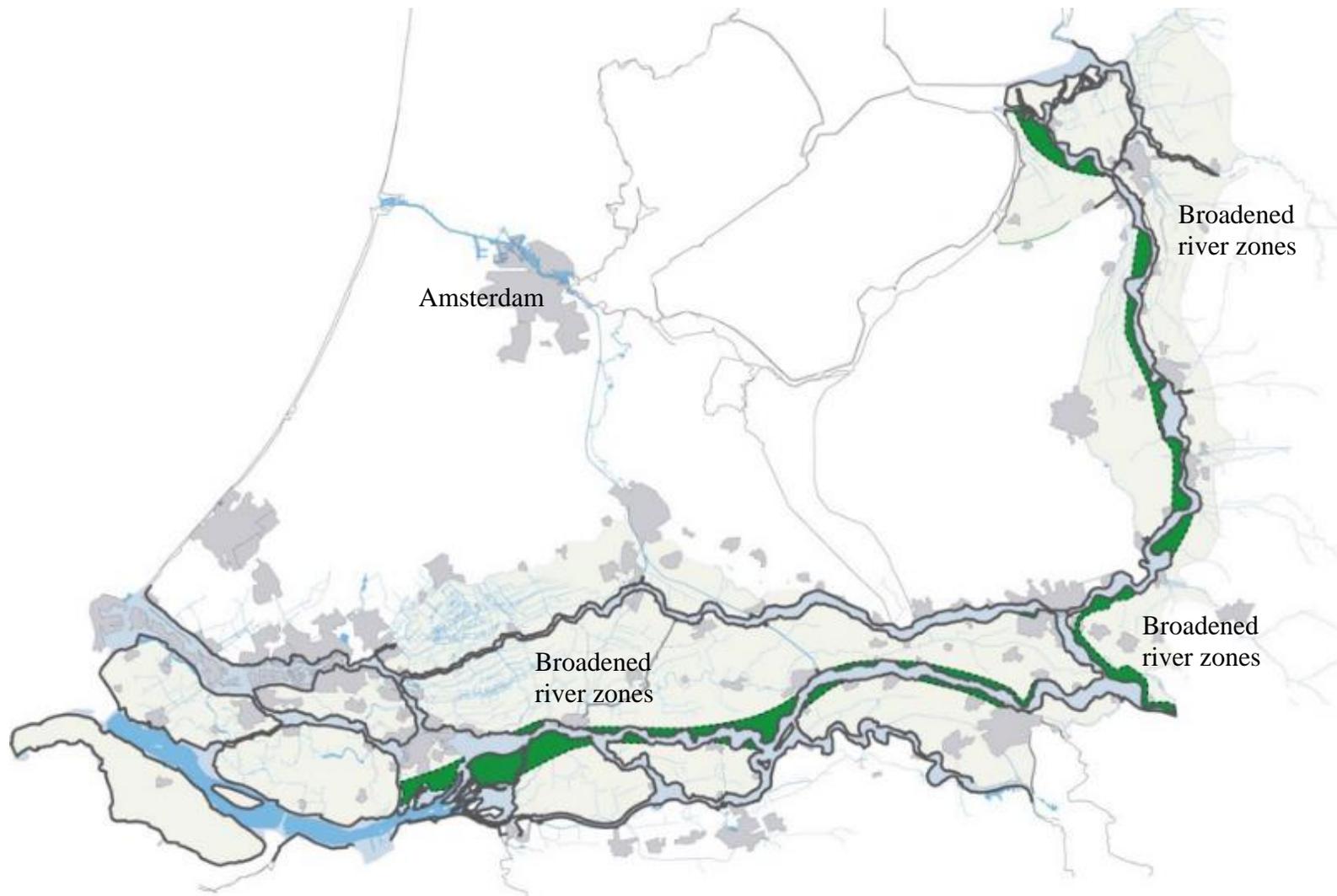


Figure 48: Broadened river zone of the Room for the River across the Dutch landscape. The drawing demonstrates the areas along the rivers from the North-East to the South-West of the Netherlands, where the individual projects have been created, expressing the length of the programme. Source: Dirk Sijmons.

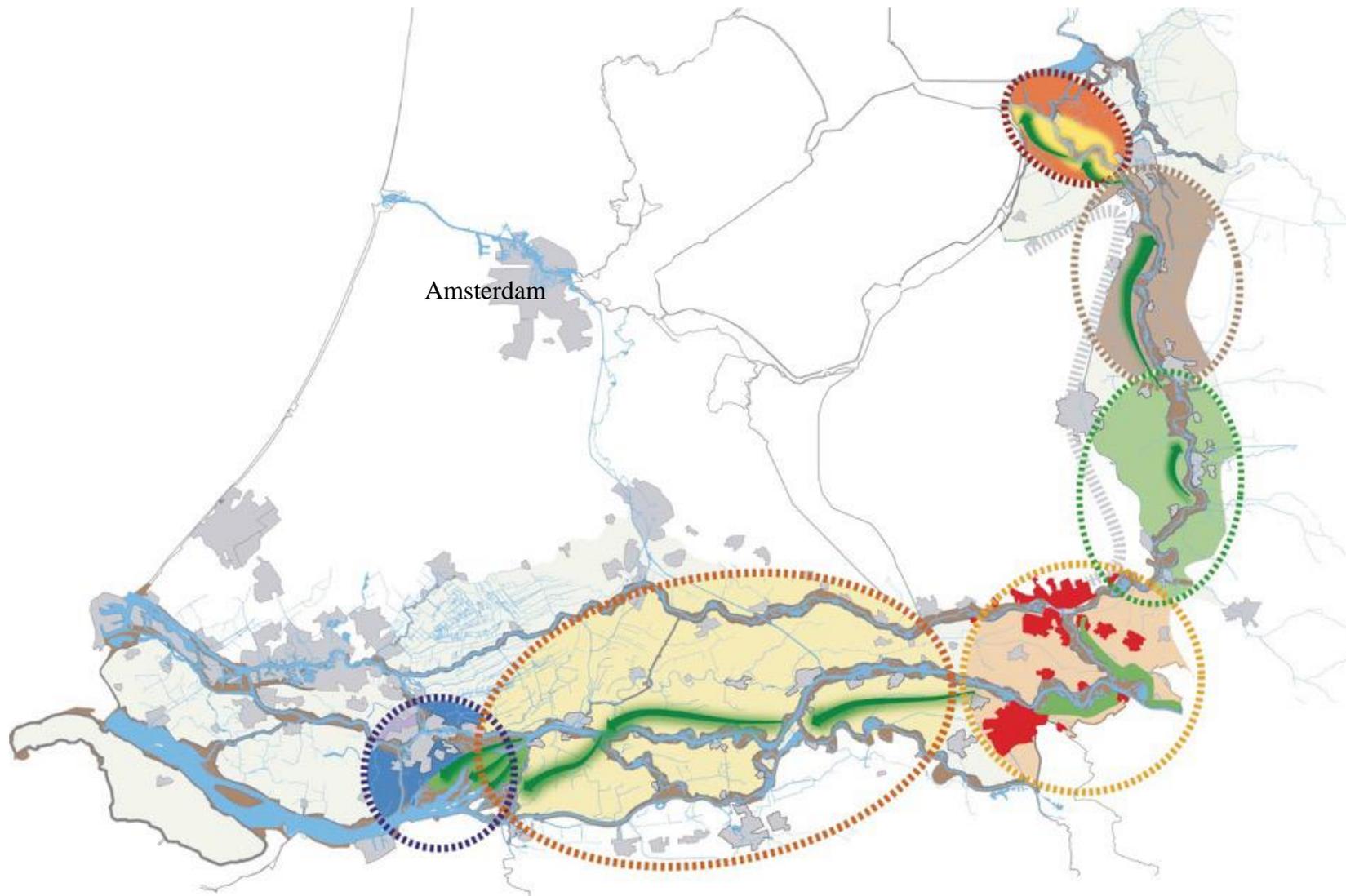


Figure 49: New rivers and river flow of the Room for the River, showing the movements of the river and the areas where the programme will have its major effect. Source: Dirk Sijmons.

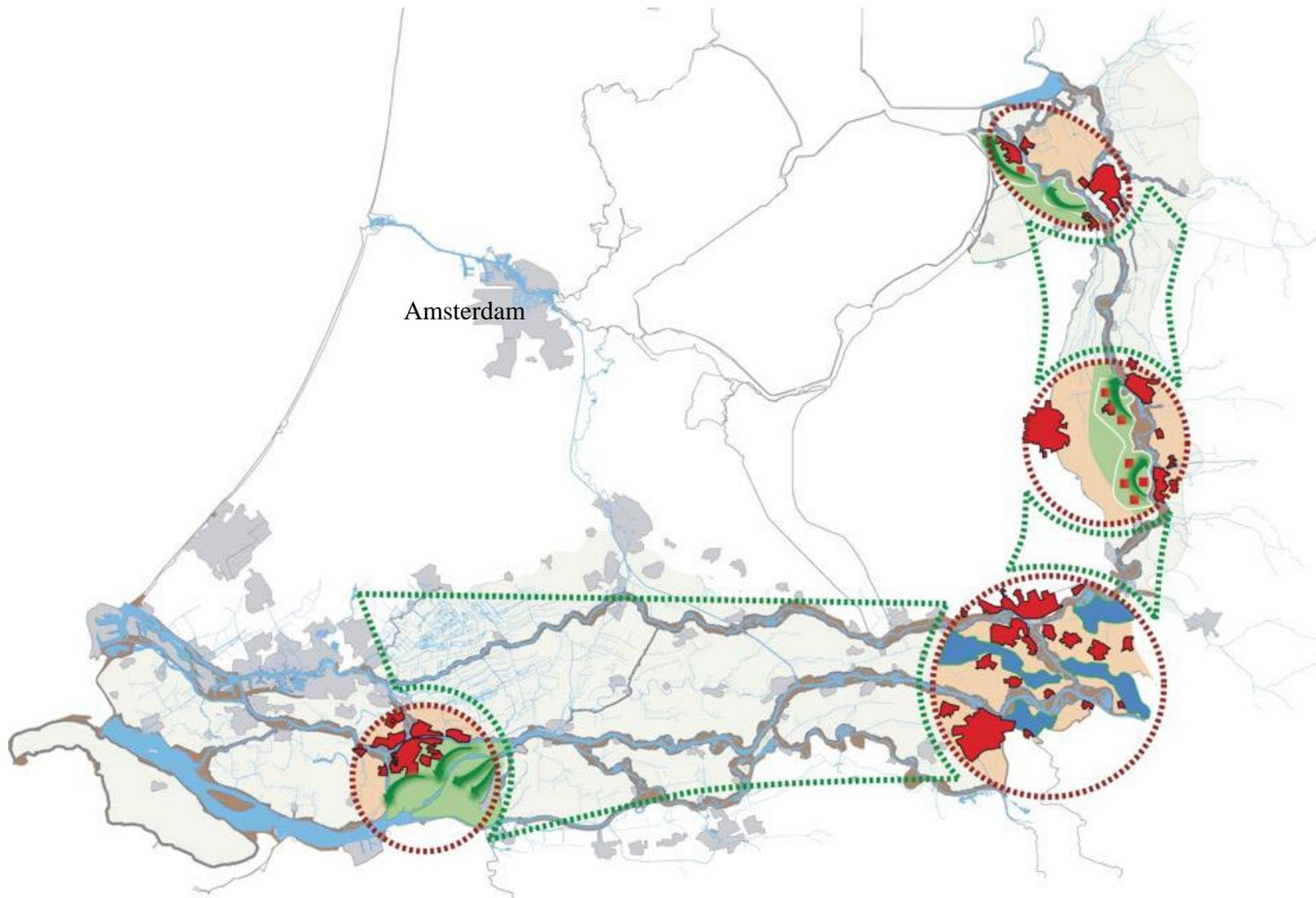


Figure 50: Urban water nodes of the Room for the River (red circled) were examined during the development of the strategy, demonstrating the emphasis given on the impact of this landscape vision for the regions. Source: Dirk Sijmons.

5.3.1 Build a vision through drawings

The pioneer strategies indicate that a successful regional landscape project has often an engaging graphic communication, which visualises the narrative and builds a strong vision for the area. But how is a vision being built through drawings? Experts suggest that an image, a picture or a drawing help on the interpretation of key concepts such as low carbon, hydrology, spatial quality and landscape identity, both on large and local scale. Annemiek Tromp (Programme Manager Room for the River-Rijkswaterstaat) suggested that a vision on large-scale master planning is important (Interview, July 2015) and Sadie Morgan explained that ‘you can sell someone a vision by popping images into their head, without actually showing them how it looks like’ (Interview, October 2015). However, case study observations suggest that in current practice a vision is often presented through documents, with minimum use of visuals.

For example, during the researcher’s placement, the HS2 project was at the ideal moment to ‘build a vision’ for the overall scheme and explore ways of communication. The narrative and vision were mainly expressed through documents such as the ‘HS2 Design Vision’ and technical specifications (Appendix 7,8) with little visual representation on a large scale. Such evidence indicates that drawings are less widely used and, especially for strategic infrastructure schemes, written documents alone seem to cover a significant part of the project, without considering how effective visuals are on the ‘decision making or expressing results of a deliberative process’ as Bart de Zwart explained (Interview, July 2015). The researcher’s evaluation, after the documents examination during the placements, has shown that the text and bullet points convey ideas in a less effective or clearly spatial way, when compared to some of the drawing examples shown earlier.

Demonstrating the importance of drawings in the conceptual development, town planner and environment consultant Tony Burton explained that in the case of HS2/HS2LV a force of ‘creative minds’ was formed willing to develop a vision for the scheme (Interview, September 2015). This force of creative minds, he continues, is almost certainly necessary to move from the textual proposal of a vision to a visual one. Tony Burton also added that often the challenge is not the design itself, but to make the decisions that a project needs. ‘They [civil servants and politicians] constantly come back to how it looks like, not how you make the decisions’ he stated (Tony Burton, Interview, September 2015), highlighting that often the image of a project built by the drawings overcomes the communication of the ideas impacting on the decisions about next steps.

Following the suggestions from the experts, it can be argued that a landscape vision needs to be presented visually as well as in text (Annemiek Tromp, Interview, July 2015) to enable better understanding of the space and to develop the designers’ ideas. Building a vision through drawings, allows the public and the designers to use them as thinking tools, exactly as it happens when designers work out ideas through sketching and drawing, and enables them to make decisions about a project. The Netherlands pioneer projects show that building a vision through drawings is possible, but it involves the need for good communication (Jan van der Grift, Interview, July 2015), and management processes. It is also revealed that the spatial expression of a vision allows the project team to evaluate the feasibility of a project, adapt, re-design and make decisions that will shape the landscape scheme. Data collected during the case studies align with literature that argues that ‘a strategic project needs a vision framing it in a specific context, giving it a direction, a meaning, a justification and legitimacy in relation to the social – spatial context’ (Van den Broeck, 2008). Especially for

schemes that deal with large scale the communication and decision making role that drawings have in the project process could affect the conceptualisation of the whole region.

5.4 Effective visuals and landscape strategies

Based on what is presented so far, it can be suggested that no matter the technique or the scale, drawings need to illustrate the qualities of a place that are instilled in the design concept. Therefore, this section evaluates visuals based on their effectiveness to express the design vision for the region or the concept of the landscape project. The effectiveness of a drawing depends on many things: the expression of the main vision, the narrative, the style of graphics, the skills of the designer, all affect the ways in which the message will be communicated and interpreted by the public (Bart de Zwart, Interview, July 2015). This section uses a series of drawings collected from the case studies to illustrate the variety of effective visuals in landscape strategic schemes, the way concepts have been expressed and where possible, the impact they have on the scheme and the engagement by the public.

Visuals are clearly perceived as a powerful tool by the experts, but they are often only used as illustrative methods of a landscape project to pass it through the planning and parliament processes (Christoph Brintrup, Interview, January 2016 and Sadie Morgan, Interview, October 2015). This section suggests that drawings can enhance effective communication of the key ideas, improving their spatial interpretation and decision-making on large scale strategies. They allow concepts, ideas and narratives to be expressed on large scale without being limited by micro scale issues.

During his interview, Bart de Zwart (Interview, July 2015), suggested that ‘design has the power to act as a visionary instrument, the ability to generate persuasive or

provoking images, as well as the capacity to influence public debate by putting forward alternate visions of the future' (Zwart, 2015). The power of visual communication has been acknowledged during the pioneer projects, however this is associated to the key issues a project aims to deliver. Examples will demonstrate how effective visuals have successfully expressed ideas during the project and how this might have affected understanding of the landscape.

It could be argued that, on a small scale, drawings are used to give an identity, build the landscape character, express the atmosphere and the functions of a place and the same time, present examples of materials, environmental characteristics and forms. With the focus of this research being on regional schemes, some of these simple elements become harder to express, simply because they are not visible on that scale. The case studies have adopted a series of different ways of visual representation – as anticipated by the variability of interpretation presented in Chapter 4 – where in strategic schemes, the vision, the main uses and the character of a place are embedded into drawings. It is often a question for both the designers and the administration of the project. Should the expression of a visual communication be detailed and precise or can an abstract drawing be informative and effective as such.

Annemiek Tromp described the example of A12 Routeonwerp regional project (Fig.51) (Interview, July 2015). She explained that the concept behind that scheme was 'landscape identity' and the A12 project focused on how to give an identity to the region. A12 Routeonwerp was one of the four highways planned for the Netherlands where the main idea was to create a character for the region and bring the attention to the landscape planning. Annemiek Tromp explained that the scheme was set to make each part of the country distinguishable during a journey on the motorway. This was possible through a distinctive drawing that would express the different characters of the

landscape, illustrating the surroundings of the motorway and the land uses as well (Annemiek Tromp, Interview, July 2015). The more effective a pictorial form, the better landscape, social and cultural values are communicated to the decision and policy makers as well as the public.

Design of the route's surroundings: design principles for the road's environs as a palette of 11 characteristic zones

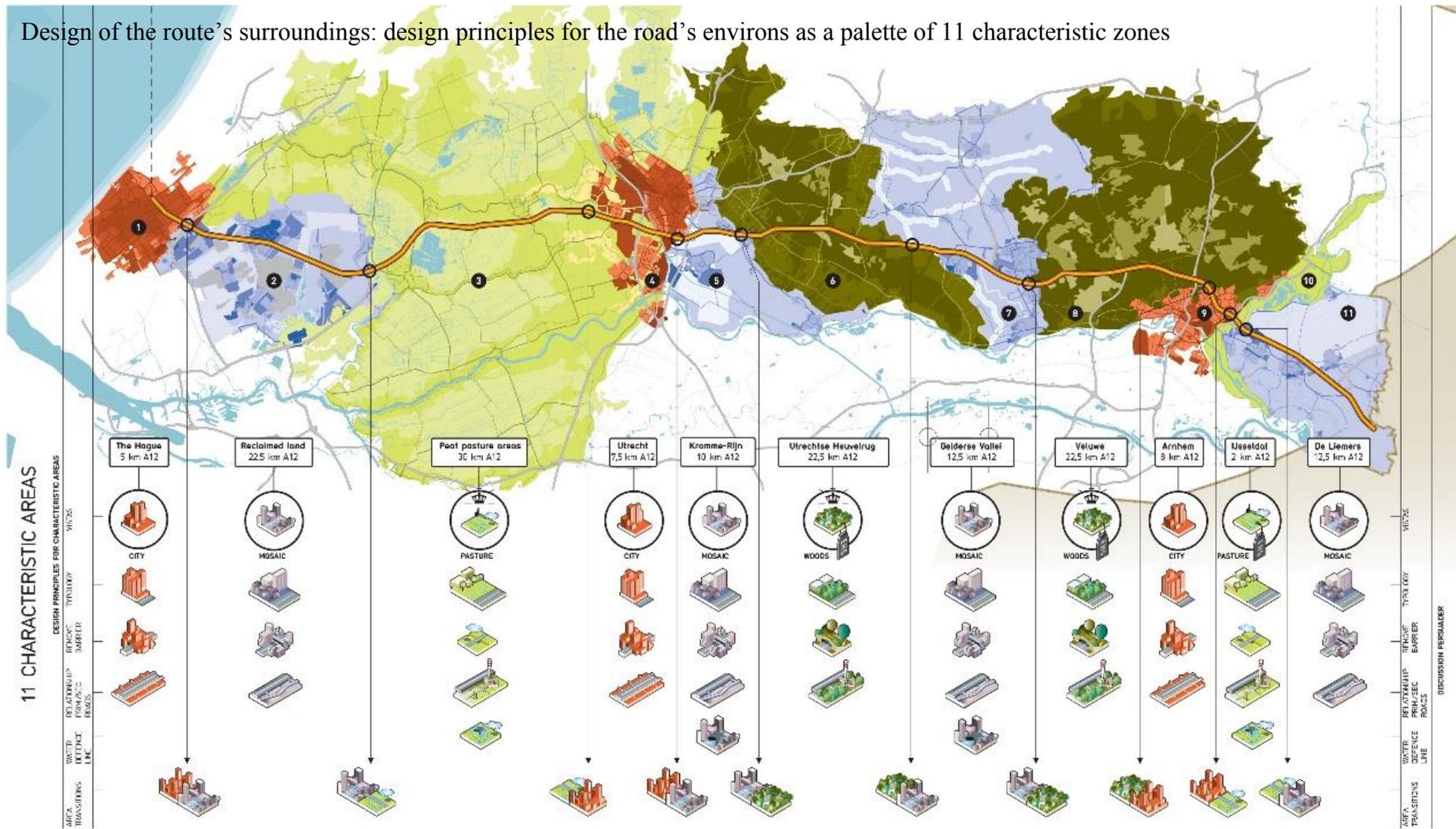


Figure 51: Design for the route A12 Routeonwerp where the 11 characteristic areas and their principles are presented creating a unique character and landscape identity for each location. The project was pointed out during the interview with Annemiek Tromp. Source: Meijsmans et al. (2010).

The influence of a drawing on strategic scale can be key in the project's development, either presenting the different functions on the landscape areas as happened in the A12 scheme (Fig.51) or focusing on the main ideas that form the landscape concept (Fig.52). For example, Figure 52 illustrates the concept of the Room for the River project in the city of Nijmegen-the Netherlands, based on the designer's perception. The widening of the river is the focus of this scheme (Mathieu Schouten, Interview, July 2015) and is presented with a bold green arrow (Fig.52). In the same drawing, the connectivity between the two settlements, the location, bridges and cycling routes are also given strong attention (Fig.52 – red arrow).



Figure 52: Conceptual drawing of the river widening in Nijmegen, Room for the River Programme, Netherlands (artist's impression, national government). Source: Mathieu Schouten.

As discussed earlier, the success of a landscape project depends on how effectively a message is communicated, engaging the interest of the viewer (Mathieu Schouten,

Interview, July 2015). Having examined visuals and drawings of large scale schemes and aligning with Bart de Zwart who stated that ‘the reason that the visual language is very different is that the images have different functions within the document’ (Interview, July 2015), this section will explore a range of different drawings in order to evaluate their communication and reveal their functions and roles in the documents. Examples of regional strategies where key ideas are presented in an abstract form have been used in very limited cases, mainly in the Netherlands. It needs to be mentioned that using the terms ‘general’ or ‘abstract’ does not mean that less thought or care have been given to the drawings, but that the drawing style is different and specific elements are highlighted as happened with the Figure 52, where the widening of the river has been emphasised.

Using drawings to express visions about a city enables us to ‘negotiate which elements are important and which are not’ stated Bart de Zwart, explaining how visuals communicate landscape design concepts (Interview, July 2015). Discussing the concept behind the drawing ‘Map of Icons’ in the city of Amsterdam-the Netherlands (Fig.53), Bart de Zwart explained that all the elements that are key to the specific concept, are enlarged and given an emphasis and therefore their ‘importance’ is more evident in the drawing. This has made the visual much more effective needing to illustrate details that will take the viewer’s attention away from the designer’s intention. Key characteristics such as water and the defence line are emphasised, however other less significant, for its purpose, features are not addressed in the drawing (eg. polders, buildings, transport). De Zwart continues ‘it’s sort of disguised as a very casual drawing, but it’s not a casual drawing. It’s very deliberated and very.... Amsterdam is bigger than actually is’ (Bart de Zwart, Interview, July 2015).



Figure 53: Map of Icons, an attempt to shake off all the detail and complexity of the landscape around Amsterdam and reveal the underlying abstract characteristics. Source: Meijsmans et al. (2010).

The same approach has been used in the ‘Stelling van Amsterdam’ drawing of the revitalisation of the 19th century defence line in Amsterdam (Fig.54). In this case the river through the city of Amsterdam is not as evident as in Figure 53, however the ring around the city, where the defence line was located, is shown in more detail to highlight the coastline. The drawing does not illustrate elements that are less relevant to the concept, avoiding confusing the viewer and creating political arguments (Chapter 6). Bart de Zwart has clarified that even if these drawings seem casual, as stated above, they are created with great care to communicate a message the most effective way (Interview, July 2015). They have been created to help the designers and the project managers to spatially present ideas that otherwise would be difficult to understand. The same point about the deliberate style of abstract drawings was made by Kathryn Moore, who during the discussion about the HS2LV drawing (Chapter 6 – Fig.68.), stated that

‘although it’s [the HS2LV drawing] like a caricature, it’s absolutely based on a really careful study of the region’ (Interview, June 2016).

Using the appropriate graphic style in landscape projects is as important as the use of an appropriate landscape in any negotiation. A dynamic and influential drawing makes the establishment of a relationship with the public easier, exactly as when a written document has an interesting and engaging narrative. Being able to visualise a landscape transformation before its implementation, stands a better chance to point out obstacles and strengths and work out a functional but also quality design.



Figure 54: ‘Stelling van Amsterdam’. Concept for the revitalization of the former defence line around Amsterdam by H+N+S. Source: van Dooren (2015).

The drawings presented above are examples of how a concept and key ideas can be communicated effectively (Figs.52, 53, 54). In landscape strategic schemes, a drawing that conveys the message across the whole scale, and builds a picture of how the narrative can be developed, is considered important in order to move the scheme forward. Depending on the project focus, main elements such as sustainability, spatial quality, connectivity and land use also need to be expressed through the drawings and project brief.



Figure 55: Lent, Nijmegen (Room for the River Programme). The picture on the left shows the area before the project starts and on the right, the proposed plan including the coasts, beaches, housing and business districts as well as the development of the natural areas. Source: Bijan Lotfi.

Figure 55 is the visualisation of the landscape strategy for the city of Nijmegen, the Netherlands. The drawing demonstrates the area before the project starts (left) and the new island that was created giving more ‘room for the river’ (right). Connectivity, settlements and environmental areas are also illustrated creating an idea of how this new space will function and how the region will change through this development. The visualisation of the island with residential, commercial and business areas enhances economic development, while the strong links with water safety and recreation of social areas deal with the hydrological efficiency and aesthetic meaningfulness goals presented by the programme aims. Explaining the impact of the drawings for this particular scheme, the lead architect stated that ‘we started designing the whole project and the people became enthusiastic about this. Because they could imagine what it is and they [could] see with drawings. We also made an animation, so they could understand what is happening’ (Mathieu Schouten, Interview, July 2015). Aligning with this notion, another interviewee has stated ‘of course graphics help. There is a

question in the interpretation, but you can use them to express your ideas' (Henk Bouwman, July 2015).

5.4.1 Communication purposes and spatial interpretation of drawings

Based on the graphic examples presented already, one could argue that the better the communication or the interpretation of a design concept is, the more effective the drawings are, however interpreting ideas is not an easy task. Especially on the regional scale, the scope of the projects is often so broad that narratives and ideas do not follow through from the conceptual to the implementation phase, and this is where the scheme can eventually become a totally different project.

Drawings have the power to express and visualise ideas (Henk Bouwman, Interview, July 2015), however other ways of communication, such as text and documentations, are often less efficient to support a design concept. The interpretation and communication of the concept to the decision makers through drawings play a vital role in the project's successful implementation. Tiago Dias, landscape design advisor for HS2 Ltd. stated that 'people compare the project to the photograph [drawing] and say, it's not the same [...]. There have to be some solutions and we will have to find the right design solutions' (Tiago Dias, Interview, January 2016). The way in which the decision and policy makers together with the administration staff and the public interpret visuals, is often crucial for the progression of the scheme and may be a decisive factor in reviewing whether this is going to move forward and the process for this to happen. Case study evidence supports that visuals have an important role, however close communication between the project team and careful examination of the drawings is necessary for this to be achieved as suggested by van der Grift in the case of the Room for the River (Jan van der Grift, Interview, July 2015). Milburn and Brown

(2003) suggest that ‘designs should have a basis that can be tied back to an understanding of processes which are often based on research findings’ as a justification and rationale of the process.

For the designers, drawing is ‘like a tool to probe or to trace the underlying logic and issues of a certain place’ (Bart de Zwart, Interview, July 2015). But for the project managers and the public, drawings are more about the communication and illustration of these ideas. As Bart de Zwart states, ‘in order to be able to design for a region you have to trace the region through the issues of the region. And facing these issues is for me, very much a design activity’ (Interview, 2015). This is supported by Moore (2003) who argues that ‘drawing remains the traditional medium within the profession for communicating ideas, [...] it is a way to explore ideas quickly and effectively. It is an analytical skill, a tool or mechanism of design’. Bart de Zwart explaining that the interpretation of key ideas from a drawing to reality is often challenging, states that ‘a designer can control what he or she wants to do with the design. But sometimes it is like a spirit out of the water. Once you’ve drawn something it also takes over. So, it starts to get some life [...]. I guess that happens quite a lot. The designer makes something and he/she wants to communicate something, but there are two ways of communication. And I don’t think you have complete control of what the design does, it does something to you as well as the designer. It resonates with the context and it becomes a mirror of what other people project on and what they want to read’ (Bart de Zwart, Interview, July 2015). The Netherlands landscape programmes ‘Room for the River’ and ‘New Dutch Waterline’, also demonstrate significant outcomes in the interpretation of key ideas by enhancing the communication at all levels (Jan Van der Grift, Interview, July 2015 and Dirk Sijmons, Interview, July 2015). By using a sophisticated process including high-level expertise, designing skills and close

collaboration between the teams, the narrative was embedded within the technical drawings and implementation phases, creating well-thought out, sustainable and quality places.

As programme manager Annemiek Tromp suggests, a combination of both visuals and text is necessary, as there are individuals who understand text better, and others who prefer images (Interview, July 2015). Especially in strategic schemes the communication and interpretation of the key ideas and quality elements can affect the implementation of the whole development. As found from the HS2 project (Case study 3), with large-scale infrastructure, heavy documentation (Appendix 8) and technical diagrams (Fig.56) often play the key role in the scheme, however one could wonder about the relation of such diagrams with the interpretation of concept ideas.

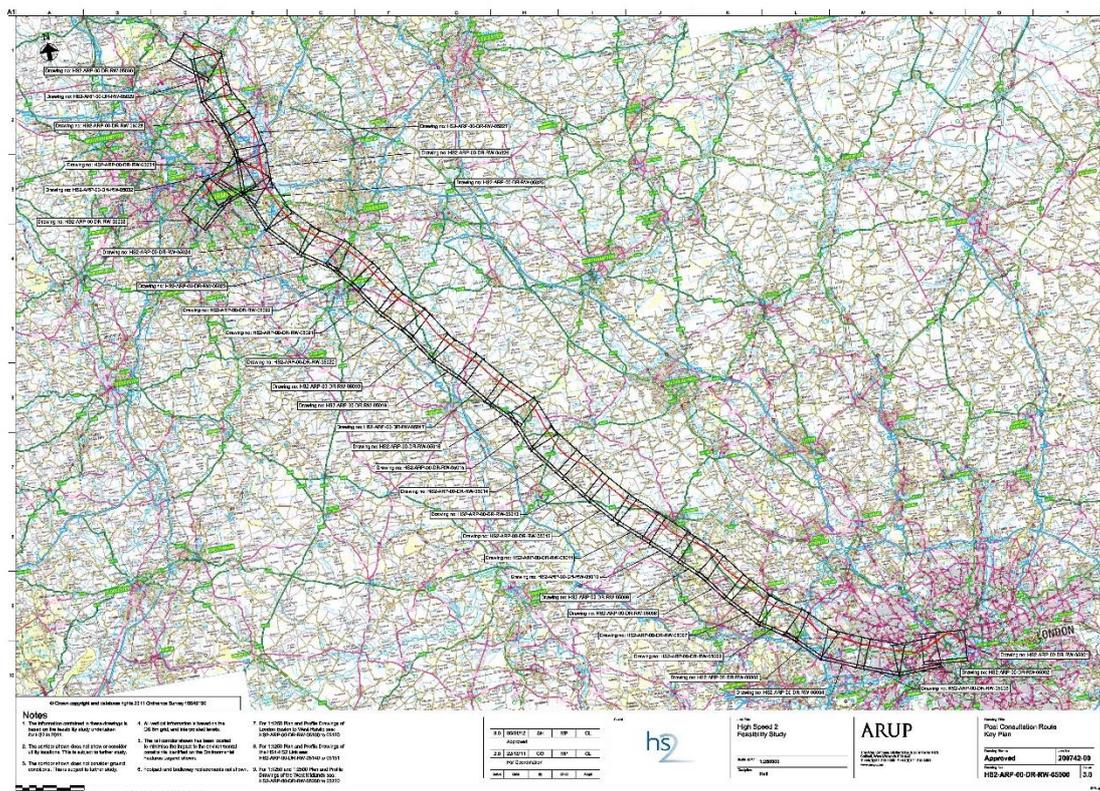


Figure 56: HS2 location plan. Entire post consultation route; map covering the whole area without expressing any contextual information about the scheme that might impact on the landscape (first published Jan 2012). Source: www.gov.uk .

One of the very first images that were published about the HS2 was a location map. Figure 56 is an interpretation of the HS2 route, without any contextual information about the project that might impact on the landscape. It is about communication, as much as interpretation. Interpretation is the point where a concept of a landscape project can be brought to life or lost, and therefore sometimes any key issues (eg. low carbon, spatial quality) that have been embedded in the drawing may not make it to the implementation phase. Jan van der Grift questions; ‘what is going to happen to the design when it is put into words?’ If you take a design and put it into words, you might forget something essential. So, receiving a drawing by post and putting it into words, it will not work!’ (Interview, July 2015).

Based on observations initiated from van der Grift’s interview, showing that pictorial forms had a positive effect in the Dutch case study, this research suggests that in regional landscape projects, communicating ideas through visual and textual language is important in order to achieve a better outcome. Interpreting narratives and ideas according to the designer’s intention is closely related to the ways in which they are visually communicated (Bart de Zwart, Interview, July 2015) as well as the expertise and familiarity of the implementation team. Therefore, pictorial forms sometimes cannot guarantee successful implementation of a sustainable and quality scheme, if good communication within the team is not in place. As Brintrup explained ‘someone will say ‘is it [the drawing] a requirement? Can I by pass it?’. And if the answer is yes, then they [the drawings] will be produced and they will be shelved and they will not do anything’ (Christoph Brintrup, Interview, January 2016). The integration of the drawings into the requirements of a project will be discussed at Chapter 6.

This section also presents two further examples of landscape proposals (Fig.57) (extracted from the pilot study) to demonstrate the extent to which similar ideas can be

visually communicated when addressed by different design teams. The overall aims of the brief were the same, but graphic style of communication was very different. In Figure 57 the final master plans of two garden city proposals, aiming to achieve sustainable places (Stoke Harbour and Uxcester), are presented. The ways in which design ideas are communicated through pictorial forms are very distinct, and perhaps aim to engage a different audience or appeal to various disciplines. One could wonder if the master plans represent the concepts the teams had for this specific brief. The Stoke Harbour proposal (Shelter & PRP) has an evocative landscape-based style presenting an image of rural landscape with immediate access to orchards, woodlands, city parks, streams and canals, while the Uxcester (URBED) proposal is communicated more like a financial economic diagram, perhaps linking to the original ambitions of the garden city as a social and economic model. Stoke Harbour is dealing with the spirit of the place, presenting a low carbon lifestyle through the green routes, the individual orchards and the water buffer zones, creating a quality landscape. Uxcester is emphasizing the financial sustainability and the beneficial outcomes of an urban environment (observations made during the pilot study).



Figure 57: Left, design concept of the 'Stoke Harbour' garden city proposal by Shelter & PRP. Right, design concept of the 'Uxcester' garden city proposal by URBED. Source: Shelter and URBED. (See enlarged image at Appendix 1).

Aiming to present examples of how specific qualities could be defined or interpreted, a series of analytical drawings were created to unpack the ideas embedded in the master plans, guided by documentation provided by the design team on which the designers had focused. Figure 58 presents a sample of the analytical drawings illustrating the green areas of the schemes. It is important to clarify that the Stoke Harbour scheme aimed for 40% of green space, and the Uxcester proposal aimed for 50%, however the first has built a more rural character, compared to the urban concept of the second. Figure 58 presents two examples of how green space can be ‘spatially’ interpreted, based on the analytical drawings, revealing that visuals often reflect the different culture of each practice. The 40% or 50% can be interpreted and communicated differently aiming to a sense of place, environmental elements such as water buffer and inundation zones, locations of woodlands, tree avenues and parks, but it can result to a different landscape character based on the different values, the various origins and backgrounds that the design teams are coming from. The fact that the teams are expressing different ideas has resulted to different expression of spatial quality and low carbon concepts, creating diverse landscape characters. It can be argued that the interpretation of the open space has a significant impact on the landscape itself, the sense of place and therefore the city and the region. Focusing on the analysis of one idea, in this case green or open space, it might be easier to demonstrate that the communication and interpretation of a design scheme is crucial for the way it will be implemented.



Figure 58: Left, analytical drawing showing green spaces of the ‘Stoke Harbour’ garden city. Right, analytical drawing illustrating the form of the open space ideas at the ‘Uxcester’ garden city proposal. Source: Author, 2014. (See enlarged image at Appendix 1).

5.4.2 Preconceptions of effective visuals

Some professionals are often reluctant to integrate drawings at the initial stages of regional scale schemes (Christoph Brintrup, Interview, January 2016). One of the main contradictions that has been identified by this research is that, especially in strategic schemes, visuals are often replaced by text and technical reports, even though they are a significant tool in decision making. The question is why this is happening, especially since there is a literature that emphasises that ‘research on design thinking argues that drawings support the design process’ (Do and Gross, 1996:1).

Observations made during the case studies, focusing on the reasons why there are certain preconceptions about visuals, suggest that drawings are often perceived as static, final and strictly illustrative. Christoph Brintrup stated discussing about drawings that ‘to the point that actually plans are produced, to build a project, so the HS2 project... until it comes to that point the project can -if the process is not in place-, it can quite easily bypass it [drawing/design]. Put a different design into it, you still end up with a plan, that tells you what to do and contractors will be able to read that plan and build for it. But the quality on that plan might not be the quality which we would understand as a vast outcome from a design point of view’ (Interview, January 2016).

Therefore, drawings and visuals are not integrated in the design and project process, but are used as finalised descriptive or illustrative elements that have little room for further development. The town planning and environment consultant Tony Burton also suggests that ‘politicians and civil servants think about design in terms of how it looks like and not how do you make the decisions’ (Interview, September 2015), giving more emphasis on their illustrative rather than their communication role.

A different point related to the preconceptions of drawings was made by Bart de Zwart who stated, that the situation of ‘public officials, administration and politics being afraid of drawings is a very real thing and I also think that one of the things they are frightened of is that once something is visualised, it’s on paper, it never disappears again. It’s there, it has become a plan in the public image’ (Interview, July 2015). The above quotes illustrate possible reasons why pictorial forms often perceived as ‘threatening’, something that may impact on their role at a landscape project. Interview data show that professionals are often reluctant to introduce drawings and visuals on large scale projects and, to a certain extent, this is because people perceive them as firm, solid designs instead of a way to express key concepts and communicate ideas. The fear of influential and effective visuals as Bart de Zwart explained might be one of the main reasons why drawings are often perceived as an afterthought in regional schemes or introduced at a very late stage of the project process and only used as illustrative tools (Interview, July 2015). As argued in sections §5.3 and §5.4, abstract drawings and images can convey the ideas without being bound to a specific image or showing exactly how an area looks like (Sadie Morgan, Interview, October 2015 - §5.3.1). Abstract visuals can engage imagination, avoiding the fears that might arise from a very detailed plan or design, that illustrates social and individual interests, and express the necessary or deliberate concepts.

5.5 New ‘territories’; impact on spatial strategies

The findings from the Landscape Observatory case study reveal new methods about the visual representation of landscape characteristics, such as the development of new types of quality maps. The landscape strategy of Cerdanya (a Landscape Observatory project) examines the integration of key ideas and their communication through maps and drawings. The project of Cerdanya is a unique collaboration of two nations (Catalan and French), since the area examined is on the border of the two countries. The territory of Cerdanya is located at the frontier of the Pyrenees mountains where a valley separates the two sides. In this scheme, aiming to describe and manage the landscape, as Irene Navarro explained, the team of the Observatory working in collaboration with the French team is collecting landscape quality objectives, which will be visually represented with the use of maps or other pictorial forms (Irene Navarro, Interview, June 2015). The rich landscape, as well as the complicated geographical borders, highlights the importance of spatial understanding. As a result, visual representation seems to be a significant tool enhancing spatial dimension and sense of place as well as a way of communication between the two cultures. During the development of this landscape project, drawings were key elements of the public consultation and participation processes, as Irene Navarro explained during her interview (July 2015), having significant results on the way regions are conceptualised and expressed. As Navarro explained, the participants had to ‘respond’ to a map prepared by the designers and locate specific areas or elements that were considered important for the area (Fig.59 – Appendix 2).

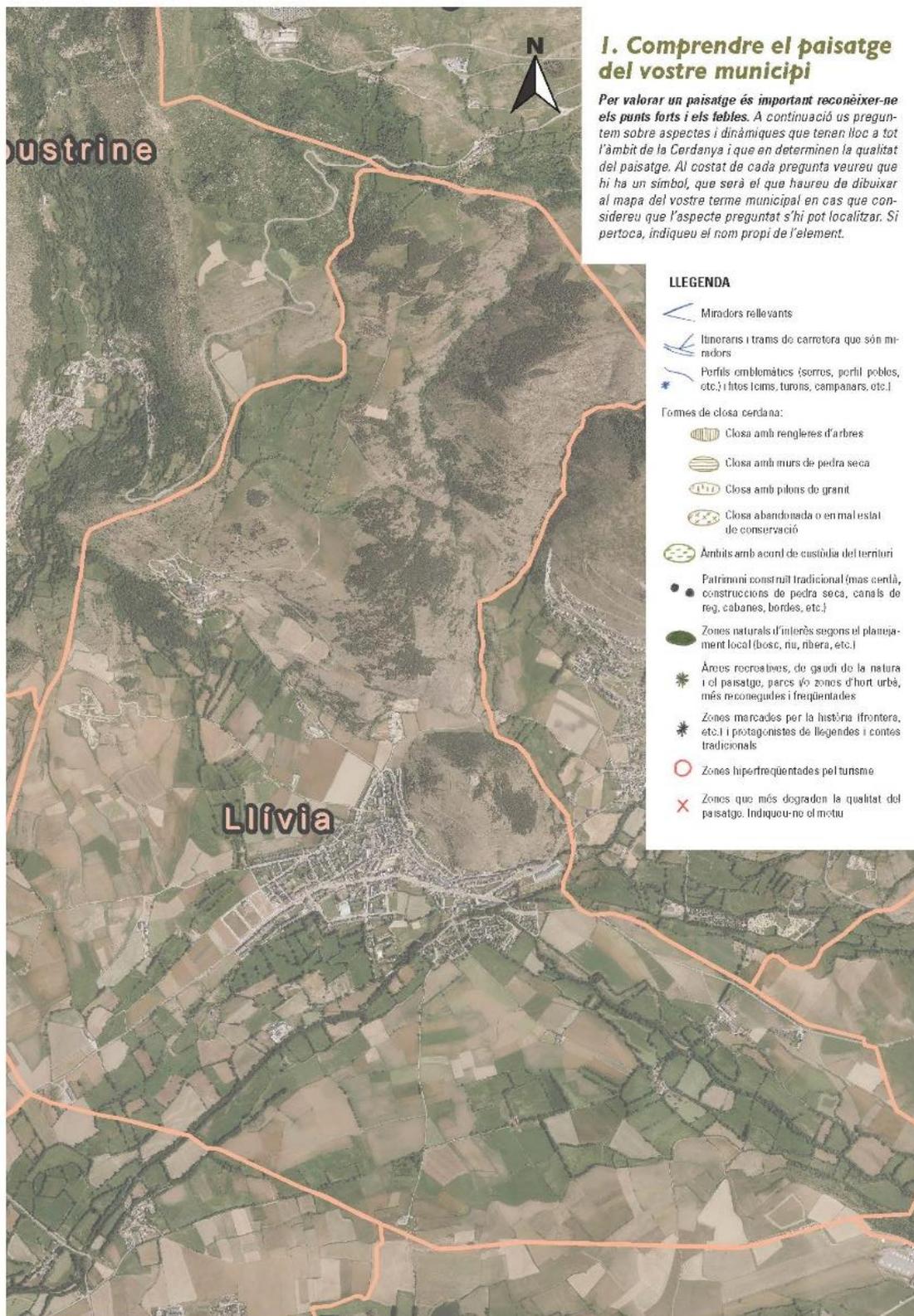


Figure 59: Map of Llívia, La Cerdanya. Landscape Observatory. Part of a participation process where attendees had the task to locate the landscape characteristics that were identified in the legend. Source: Irene Navarro.

This method sounds simple, but it has not been extensively used in public consultation workshops so far, since the participants are usually asked to draw what they think of the area, or map its landscape characteristics, and not to locate elements specified by the project team to the map, as happened at Cerdanya. Such mapping techniques help the participants to focus on specific landscape elements, and benefit the project management team which uses the locals' knowledge revealing possible unknown characteristics of the area.

The outcomes of this project were the creation of the 'Mapa del paisatge transfronterer de la Cerdanya', (Fig.60). The bilingual drawing (Catalan – French) demonstrates the main values and future strategies of the Cerdanya valley regarding the landscape. This is a pioneer drawing, or map as the Landscape Observatory names it. The cross-border nature between Catalonia and France, makes it an innovative endeavour across Europe implementing the aims of the European Landscape Convention. It identifies the landscape on local scale, but demonstrates landscape quality objectives and a territorial plan for Cerdanya, based on its values and the way the landscape is perceived and lived by locals. Instead of being a descriptive map, the 'Mapa transfronterer' combines the technical language necessary for management and planning with drawings and visualisations aiming at the sensitization of the society and the landscape institutions of the area. It explains future possibilities for the area and points to scenic backgrounds that must be preserved, the need to enhance viewpoints and degraded areas that should be improved.

Pla de paisatge transfronterer
Projet du paysage transfrontalier
La Cerdanya / La Cerdagne

La Cerdanya és un paisatge que té una història i una identitat pròpies, que s'han desenvolupat al llarg dels segles. És un paisatge que té una gran diversitat de paisatges, que són el resultat de la interacció entre el medi natural i l'acció humana. Aquesta diversitat és el que fa que la Cerdanya sigui un paisatge tan interessant i tan ric.

El Pla de Paisatge Transfronterer de la Cerdanya és un document que té com a objectiu principal definir i protegir aquest patrimoni paisatgístic. És un document que té una gran importància, ja que és el resultat d'un treball conjunt entre els dos països que comparteixen aquest territori: França i Catalunya.

El Pla de Paisatge Transfronterer de la Cerdanya és un document que té una gran importància, ja que és el resultat d'un treball conjunt entre els dos països que comparteixen aquest territori: França i Catalunya.

Característiques concretes / Caractéristiques spécifiques
Un paisatge transfronterer / Un paysage transfrontalier
Elements representatius del paisatge de la Cerdanya
Éléments représentatifs du paysage cerdanais

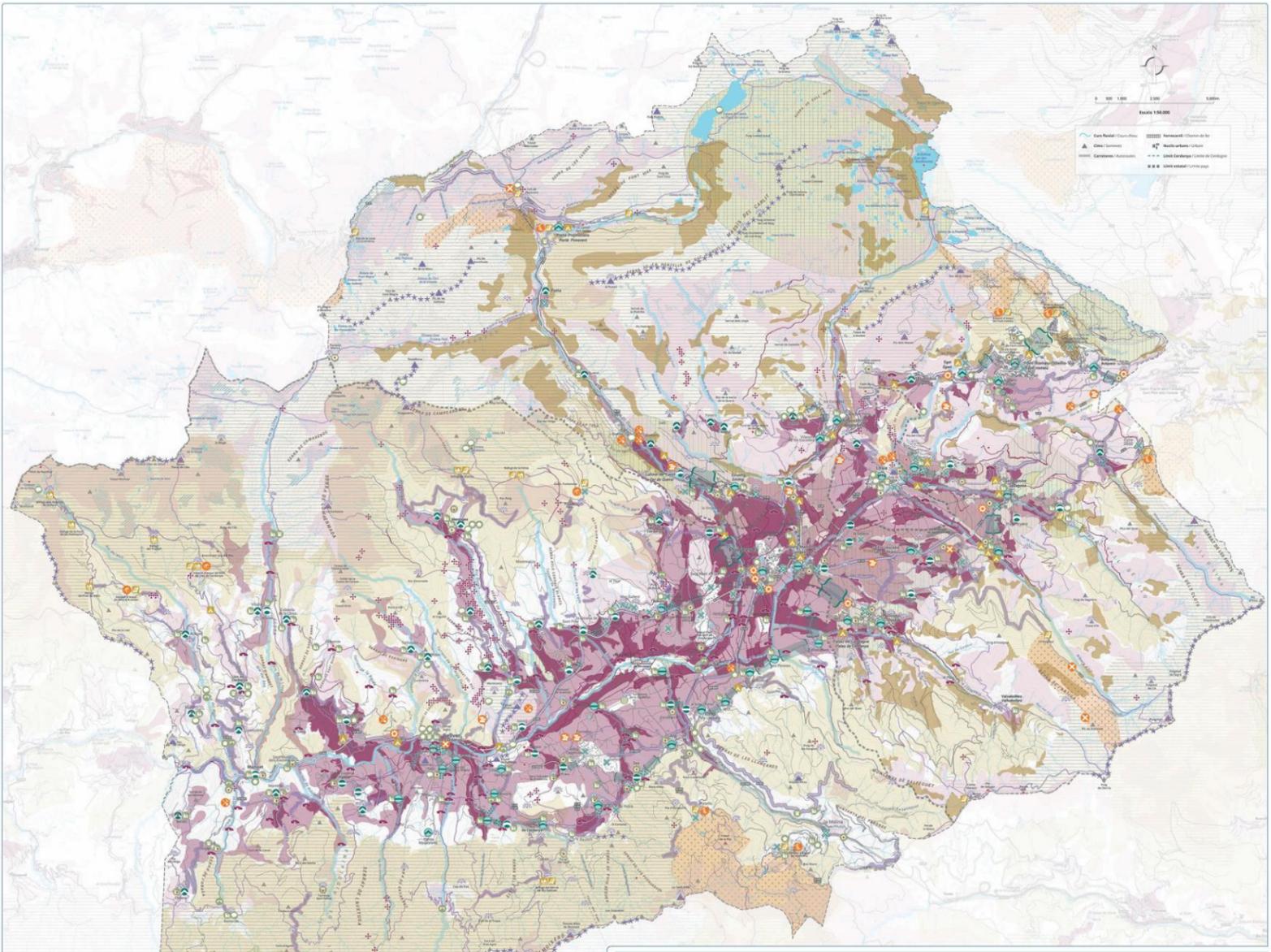
Elements més representatius / Les plus représentatives

Una plana paisatgística i paisatges valles costeres
 Les planes paisatgístiques i paisatges valles costeres són característiques de la Cerdanya. Són paisatges que són el resultat de la interacció entre el medi natural i l'acció humana. Aquests paisatges són molt importants, ja que són el resultat d'un treball conjunt entre els dos països que comparteixen aquest territori: França i Catalunya.

La clau paisatgística, sectorial agrícola d'origen rural
 La clau paisatgística, sectorial agrícola d'origen rural, és una característica molt important de la Cerdanya. És el resultat d'un treball conjunt entre els dos països que comparteixen aquest territori: França i Catalunya.

Unes zones de canals i l'espai
 Unes zones de canals i l'espai són característiques de la Cerdanya. Són paisatges que són el resultat de la interacció entre el medi natural i l'acció humana. Aquests paisatges són molt importants, ja que són el resultat d'un treball conjunt entre els dos països que comparteixen aquest territori: França i Catalunya.

Unes zones de canals i l'espai
 Unes zones de canals i l'espai són característiques de la Cerdanya. Són paisatges que són el resultat de la interacció entre el medi natural i l'acció humana. Aquests paisatges són molt importants, ja que són el resultat d'un treball conjunt entre els dos països que comparteixen aquest territori: França i Catalunya.



Objectius de qualitat paisatgística
Objectifs de qualité paysagère

El objectiu de qualitat paisatgística de la Cerdanya és un document que té com a objectiu principal definir i protegir aquest patrimoni paisatgístic. És un document que té una gran importància, ja que és el resultat d'un treball conjunt entre els dos països que comparteixen aquest territori: França i Catalunya.

RENFORÇAR ELS ESPAIS AGRÍCOLES
REINFORCER LES ESPACES AGRICOLES

1.1 **Reforçar l'espai agrícola**
 Reforçar l'espai agrícola és un dels objectius principals del Pla de Paisatge Transfronterer de la Cerdanya. És el resultat d'un treball conjunt entre els dos països que comparteixen aquest territori: França i Catalunya.

1.2 **Conservació de l'espai agrícola**
 Conservació de l'espai agrícola és un dels objectius principals del Pla de Paisatge Transfronterer de la Cerdanya. És el resultat d'un treball conjunt entre els dos països que comparteixen aquest territori: França i Catalunya.

1.3 **Reforçar l'espai agrícola**
 Reforçar l'espai agrícola és un dels objectius principals del Pla de Paisatge Transfronterer de la Cerdanya. És el resultat d'un treball conjunt entre els dos països que comparteixen aquest territori: França i Catalunya.

1.4 **Conservació de l'espai agrícola**
 Conservació de l'espai agrícola és un dels objectius principals del Pla de Paisatge Transfronterer de la Cerdanya. És el resultat d'un treball conjunt entre els dos països que comparteixen aquest territori: França i Catalunya.

1.5 **Reforçar l'espai agrícola**
 Reforçar l'espai agrícola és un dels objectius principals del Pla de Paisatge Transfronterer de la Cerdanya. És el resultat d'un treball conjunt entre els dos països que comparteixen aquest territori: França i Catalunya.

PROMOURE UN CREIXEMENT ORDENAT DELS NUCLIS
FAVORISER UNE CROISSANCE RAISONNEE DES NOUVEAUX D'HABITAT

Objectiu	Descripció	Impacte Positiu	Impacte Negatiu
2.1	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
2.2	Conservació de l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
2.3	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
2.4	Conservació de l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
2.5	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat

INTEGRAR I MILLORAR LA IMATGE DE LES ZONES D'ACTIVITAT ECONOMICA
INTEGRER ET AMELIORER L'IMAGE DES ZONES D'ACTIVITES ECONOMIQUES

Objectiu	Descripció	Impacte Positiu	Impacte Negatiu
3.1	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
3.2	Conservació de l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
3.3	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
3.4	Conservació de l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
3.5	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
3.6	Conservació de l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat

PRESERVAR I POSAR EN VALOR ELS PAISATGES NATURALS
PRESERVER ET VALORISER LES PAYSAGES NATURELS

Objectiu	Descripció	Impacte Positiu	Impacte Negatiu
4.1	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
4.2	Conservació de l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
4.3	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
4.4	Conservació de l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
4.5	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
4.6	Conservació de l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat

POTENCIAR LA LLEGIBILITAT I NITIDESA DEL PAISATGE DE LA CERDANYA
REINFORCER LA LISIBILITE ET LA NETTETE DU PAYSAGE CERDAN

Objectiu	Descripció	Impacte Positiu	Impacte Negatiu
5.1	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
5.2	Conservació de l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat

POSAR EN VALOR EL PATRIMONI CONSTRUÏT
METTRE EN VALEUR LE PATRIMOINE BÂTI

Objectiu	Descripció	Impacte Positiu	Impacte Negatiu
6.1	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
6.2	Conservació de l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
6.3	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
6.4	Conservació de l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat
6.5	Reforçar l'espai agrícola	Millora de la qualitat paisatgística	Reducció de la biodiversitat



Figure 60: Mapa del paisatge transfronterer de la Cerdanya. Landscape Observatory. A bilingual, cross-border drawing, that demonstrates values and future strategies of the Cerdanya valley. The map was finalized in December 2016, and it was obtained after the case study. Source: Landscape Observatory.

5.6 Key findings of the role of drawings

This chapter has presented and discussed evidence on the role of drawings in regional landscape strategies as well as the way these could change perceptions and affect decisions making in a landscape project. Both the pilot and the case studies have revealed evidence that good communication and interpretation of low carbon, spatial quality and design concept, is a major and necessary step closer to the successful delivery of regional landscape schemes. Pictorial forms are an important tool for the better understanding of the landscape by improving the knowledge of the area. Visuals have also been found very effective on expressing spatial visions and introducing new ideas for potential developments. The ability to communicate a narrative through drawings and build a vision for the whole region together with the findings that can effectively express key issues, such as spatial quality and low carbon, are considered very interesting and high potential areas in regional landscape design. Current practices rely on the skills of talented designers who are often able to reflect those qualities on paper. And as Moore (2003) confirms ‘this partly explains why it is thought that the more skilful one is with a pencil, the more poetic and sensitive the design’.

A significant finding is that landscape drawings are far more important, for the communication of the landscape projects, than was thought at the early stages of this research and as it has been demonstrated by the case studies with the emphasis given to visuals during their landscape processes. The process of design involves a lot of ‘thinking via drawing’ and drawings are often an illustration of design. In design disciplines, visualizations are considered fundamental, however in regional landscape strategies, they are often replaced by maps or technical plans or even just lists of information lacking any spatial dimension. Evidence has shown that pictorial forms can illustrate concepts, communicate key elements and influence the decision making and

public opinion. Based on case study data, this research suggests that visuals, maps and drawings can reveal information that is often less obvious when presented on lists or text, giving the opportunity to the audience to develop a spatial understanding of the project.

As a way to respond to scale this chapter also suggests that abstract drawings that avoid expressing less relevant details might be a more effective way of communication on large scale developments. The thesis argues that general or abstract drawings are considered very effective on the development of the narrative as well as communicating the ideas to an audience. Pictorial forms allow us to visualise concepts, but they can also give a spatial dimension to landscape ideas in order to trace the underlying elements of landscape and develop a convincing design proposal. This justifies the reason why they are so important in landscape schemes and it also verifies the continuous and significant role of drawings on large scale landscape strategies.

It is argued that drawings and designs are important in the development of a landscape scheme and therefore they should be considered as part of the project process, however findings of this research reveal that on regional scale, visuals face specific challenges that often impact on their use during the project development. Drawings can be more or less effective depending on the level of familiarity the viewer has with the particular graphic style used (e.g. the Netherlands, Landscape Observatory). Interview evidence has demonstrated that drawings can be fragile and easily overlooked at a project process and therefore the way the viewer perceives them is very important especially in a regional level. The concept of fragility has been developed by this research aiming to describe the situations where even though drawings are considered powerful, are also perceived as threatening at times. This motion has resulted to drawings being avoided by strategic schemes. The thesis argues that this fragility of the visual material can

improve by integrating them at the project process, but without a policy or legislation that might be difficult to establish. Indications that visuals were less used during the project implementation process, despite the fact they were considered powerful, were unexpected and surprising, but somehow justify a very specific part of the literature that is considering drawings as important but misused elements of landscape design. This is considered an important finding impacting on the communication and decision making of the strategic schemes, therefore the integration of visuals in the project framework will be discussed in Chapter 6.

Chapter 6

Delivery in regional infrastructure projects

6.1 Introduction

The findings and discussion in Chapters 4 and 5 (Section II) have addressed the concepts of low carbon and spatial quality in landscape strategies as well as the ways in which these ideas are communicated and spatially interpreted. This chapter discusses the current position of legal actions and policies in regional landscape schemes. It explores the importance of legislation for the design and implementation phase of a large-scale project, the reasons why parts of the process might need to embrace a different philosophy and the impact this has on the delivery of the scheme. It will focus on effective ways of delivery identified from the cross-European projects and evaluating the process by which this has been achieved, as well as the extent to which these ideas can be embedded in regional schemes. Collected data have shown that a sophisticated process focusing on spatial understanding, a different way of ‘conceptualising and shaping the project’, the integration of key ideas into policies and politics and the importance of early planning at the implementation and delivery of a large-scale scheme, are all important elements for the regional design project. Ideas identified by this research, including timing, project framework and policies can have significant impact on new ways of project delivery. Successful implementation of the above concepts would enhance landscape identity creating a sustainable and quality place. Examples of decisions made, policies and legislation as well as key lessons learned from the case studies will be presented.

Diagrams and images collected during the research, interview quotations, and excerpts from observations will support the findings. The following sections focus on key findings extracted from the different case studies, however the collected data have been considered as a whole and therefore examples of all of the case studies will be presented in the following sections.

6.2 Evaluating the framework of regional landscape schemes; timeline

Examining the frameworks evolved by the pioneer studies of the Landscape Observatory, the Netherlands and the HS2/HS2LV, this research suggests that alternative concepts and ideas have been identified and developed resulting in new processes that can shape the project, considering methods and techniques discussed in previous chapters. Looking and evaluating the need of the landscape, the area and the society, these projects were not only planned to deliver a piece of infrastructure, but to create sustainable places and cover environmental and social needs paying respect to the cultural aspects.

Burton suggests that most of the large-scale infrastructure projects follow the ‘common’ and ‘conventional’ process of management and delivery, and it is only when there is a ‘real pressure from creative minds⁷, as happened to HS2/HS2LV, that a new way will emerge’ (Tony Burton, Interview, September 2015). He continues stating ‘if HS2 can be a very small part of challenging that conventional thinking, great. And that’s what they are trying to do by getting a design panel’ (Tony Burton, Interview, September 2015).

⁷ Burton used the term ‘creative minds’ to refer to experts who had a holistic vision that could benefit the scheme and the regions. Such contributors are referred to in the HS2 Design Vision (Appendix 7).

Regional and strategic scale schemes are often conceptualised, established and delivered by the project management or administration process, controlled by governmental institutions. Brintrup explains that some projects also follow European policy, stating that decisions are often ‘based on certain commitments, on certain legislation, and in the European legislation. Over the last few decades, they [landscape schemes] are driving environmental policies and environmental design, quite heavily’ (Christoph Brintrup, Interview, January 2016). The values of planning organisations control the aims of the scheme, the funding and therefore its implementation. What is being suggested here is that a different framework, focusing on the conceptualisation and the actions shaping the scheme’s vision, has the potential to impact on governmental values as well as project delivery and outcomes.

Case study observations from the Landscape Observatory and the Netherlands have also revealed that the specifically designed frameworks and new legislation introduced have helped to launch a holistic process embedding spatial quality and low carbon ideas into the schemes’ concept and narrative through drawings. Either dealing with the landscape and sensitise the society concept such as the Landscape Observatory (Pere Sala, Interview, June 2015) or having the desire to create a landmark project, addressing climate change, while the same time enhancing economic and social values of the country (the Netherlands), these strategic developments have the support of the governments and policies before and during the process. An example has been presented by the lead landscape architect of Nijmegen, who explained that ‘it was great that they [governmental institutions] had already the focus on a national level on the spatial quality so we could talk about it easier and say this is spatial quality [in the Room for the River]’ (Mathieu Schouten, Interview, July 2015). Having a governmental strategy which encourages integration of issues, such as low carbon and

spatial quality into regional schemes, is a significant support to a project framework that introduces new ideas (Mathieu Schouten, Interview, July 2015).

The timelines for the Catalan, the Netherlands and the UK case studies are presented below highlighting key actions and policies (Tables 8, 9, 10).

Table 8: Establishment of the Landscape Observatory and key actions

Date	Action
October 2000	Approval of European Landscape Convention (ELC)
December 2000	Catalonia Parliament is the first European legislative chamber to join ELC
November 2004	Legal formation of the Landscape Observatory
June 2005	Approval of Law on Catalan Landscape Protection, Management, and Planning by the Catalan legislative chamber
June 2005	Documentation of Landscape Charters by Law 8/2005
September 2006	Approval of Regulations Decree 343/2006
September 2006	Decree 343/2006 assigns the Landscape Observatory the task of creating the Landscape Catalogues
September 2006	Landscape Charters content definition by Decree 343/2006
During 2007	Experimental education centres
During 2007	Creation of a documentation centre by the Landscape Observatory
December 2007	Natural Patrimony and Biodiversity Law 42/2007
December 2007	Sustainable Development in Rural Communities Law 45/2007
June 2008	Royal Legislative Decree 02/2008 approving edited Law in Urban Planning
August 2008	Approval of the Landscape Catalogue Terres de Lleida (Published in 2010)
January 2009	Wide implementation of education for landscape in schools
During 2010	Began the work to create educational programme aim to schoolchildren 6-12 years of age
May 2010	Approval of the Landscape Catalogue Camp de Tarragona (Published in 2012)
July 2010	Landscape Directive of de l'Ebre, activity of the Landscape Observatory
August 2010	Approval of the Landscape Catalogue Terres de l'Ebre (Published in 2013)
September 2010	Landscape Directive of Gironines, activity of the Landscape Observatory
November 2010	Approval of the Landscape Catalogue Comarques Gironines (Published in 2014)
April 2013	Approval of the Landscape Catalogue Alt Pirineu I Aran
December 2014	Approval of the Landscape Catalogue Regio Metropolitana de Barcelona
July 2016	Approval of the Landscape Catalogue Comarques Centrals

Table 9: Room for the River Programme timeline and key actions

Date	Action
1993	Severe floods in the Netherlands
1995	Severe floods in the Netherlands
1996	Room for the River Policy by the Government
1997	Fourth Water Management Memorandum
1998-1999	Study on the implementation of new policies
2003	Start of regional process
2003-2006	Plan phase / study
2006	Spatial Planning Key Decision (SPKD) by Dutch cabinet
2006	Approval of the Room for the River by the Dutch government
2007	Planning decision for Room for the River formally put in operation
2007	Beginning of work / Implementation
2010-2011	Contract / Project development depends on the location
2012-2016	Implementation and delivery of projects
2016	Management

Table 10: HS2 timeline and key actions

Date	Action
January 2009	Government established HS2 Ltd. to examine the case of a new high-speed line
March 2010	HS2 report and supporting studies is published with preferred routes
March-June 2010	Government commence a consultation on Exceptional Hardship compensation scheme
May 2010	Urgent review request of the proposed route by the Secretary of State
December 2010	Government publishes a revised HS2 route
Feb-July 2011	Department of Transport to undertake a national consultation
January 2012	Government proceeds with HS2
October 2012	Public consultation
January 2013	Announcement of the initial HS2 phase
May 2013	Consultation on Environmental statement – Phase 1
July 2013	Launch of Phase 2
October 2013	House of Commons votes the Preparation Act
November 2013	The Queen approves the Preparatory Act for HS2
End 2013	Introduction of Hybrid Bill
March 2014	MPs vote on the ‘principle’ of HS2
2015	Target date for Royal Assent
March 2015	Chair of Design Panel appointed
October 2015	Formation of Design Panel for HS2
February 2017	HS2 Received Royal Assent

6.3 Clear ideas and delivery in landscape design

The integration in the implementation phase of sustainability, low carbon and sense of place, often requires careful planning and a strong project process. The way in which such ideas are communicated is vital. A less effective communication strategy within the project management can cause delays in the implementation as Van der Grift has explained discussing the Room for the River (Interview, July 2015). Tony Burton also emphasized that ‘you need to be clear of what you’re trying to achieve and then use tools, communication channels and vocabulary that are going to be most effective achieving it’ (Interview, September 2015), emphasizing the significance of clarity for the project vision and the key role that good communication plays in the implementation of this vision. This study has demonstrated examples where effective drawings act as communication mechanisms ‘securing’ the delivery of ‘fragile’ concepts by integrating them in the narrative and vision of the whole scheme. This section suggests that integrating drawings in regional projects can be one of the ways of effective communication. Especially for large-scale schemes the natural and geographical characteristics (valleys, streams, altitude), as well as the culture and history of the area, can be brought to life by drawings and play a significant role in the project development and the decisions made during the landscape design process (Bart de Zwart, Interview, July 2015 and Kathryn Moore, Interview, June 2016). In the following sections an exploration of how this can be achieved with the support of a project framework will be presented and discussed revealing successful examples that have been established across Europe.

6.4 Conceptualising and shaping

The emphasis of this section is the process followed to embed the concept of quality in a strategic scheme and identify ways in which its integration in a project framework improves the possibilities for its delivery. A variety of processes across Europe demonstrate the mechanisms that have been developed both on a regional and smaller scale. Administrative processes often struggle towards the implementation phase. The overall vision or strategy sometimes does not follow through the required stages of a scheme and therefore the delivery is very different from the initial concept.

The Design Council states that ‘the importance of design considerations in nationally significant infrastructure projects was set out in National Policy statements’ (Design Council, 2012), however there are a few examples on a large scale to date. It also adds that ‘Nationally Significant Infrastructure Projects (NPS) must make design an integral part of their planning process and demonstrate that good design and the concerns of communities and stakeholders have been taken on board in the planning process’ (Design Council, 2012). Especially for complex ideas investigated by this research such as drawings, low carbon and spatial quality, the lack of structure could in some way reduce the possibilities that they will be embedded in the landscape scheme. According to interview evidence, quality ideas are neglected, forgotten, or deliberately avoided if a structure to secure their presence on the scheme is not in place (Christoph Brintrup, Interview, January 2016). Evidence of such practices is primarily identified in the pioneer schemes examined by this thesis.

At the HS2 scheme, for example, the initial focus of processes used to be from the broad scale, down to the very detailed characteristics, without considering the intermediate stages. As Moore explained, the railway line was going ‘from the macro, right down to the very detailed level, with no speculation or design in between. So, what we tried to

do on the [design] panel was to move it away from this very technical specification, to talk about something that is far more location in the sense of the place or the places, that the railway line goes through, to understand that they have to be responsive in the place' (Kathryn Moore, Interview, June 2016). Christoph Brintrup stated that drawings have a great impact in the development of the project, however 'they can only happen if processes are in place, if design strategies and design policies are firmly anchored [*sic*] [be at anchor] in the project' (Interview, January 2016). Together with Tony Burton's views that creative discourse can happen if there is a pressure from experts, a real burst that will come into a project, 'create a few waves in the process and cut across a few protocols' (Interview, September 2015), it can be suggested that drawings and designs should be integrated at the project planning, having a significant role in the communication of ideas at regional strategies.

From the Netherlands case study, it is clear that a sequence of processes referred here as 'shaping the project/project framework' need to be established and be introduced to all the major infrastructure schemes. Such administrative frameworks can develop on a strategic scale (examples of Landscape Observatory and Room for the River) and form a significant part of decision making, securing the way in which quality elements can be spatially implemented. Van den Broeck (2008), discussing administrative processes and policies, has suggested that 'it is a challenge to develop a new kind of 'frames' and a new way to use them for judgement and decision making aiming at spatial quality, however these frames meant to ensure legal certainty'. Examples of project planning and 'strategic frameworks' collected during the research placements are presented and illustrated below. These diagrams are the outcomes of the discussion between the researcher and the interviewees and they aim to capture the process that was developed at each landscape project. The case studies have established ways to integrate quality

through the different stages of the planning process, however different ‘frameworks’, ‘structures’ or methods to ‘shape a project’ are expected to develop in other occasions. Such innovative projects are challenging the current processes and therefore the project framework described in Figure 61 is a diagrammatic representation of the main steps followed by the region of Catalonia when a new planning proposal is developed. This diagram includes actions like development of policies, communication of the vision through drawings, participation processes and engagement within different institutions. It was specifically developed for the region of Catalonia and so some of the mechanisms followed might not be relevant to other areas.

Carles Castells explains how land planning and legal schemes of the area respond to the project framework. He made it clear that the work of the Land Planning and Analysis office, where he is based, it is usually the predecessor of what is called the ‘initial plan’ (Fig.61A) that is the first stage of the presented structure (Interview, June 2015). That means that a topographical, geographical, environmental and historical analysis has already been established at that point, revealing some of the natural, social and cultural characteristics of the landscape. Environmental assessments, ecological and sustainability concepts are also commissioned (Carles Castells, Interview, June 2015), but are not explicitly identified (e.g. a list) at the presented project process. Explaining the establishment of this framework, Castells clarifies that the ‘legal scheme between regional and local scale is more or less the same’ (Interview, June 2015), and therefore some of the actions of the regional project process (Fig.61) might be similar on the local scale.

It seems that the ideas of sustainability, environment and low carbon are integrated within the scheme from the very beginning, as Castells explained (Interview, June 2015), giving the opportunity for professionals (designers, engineers, civil servants)

and public to familiarise themselves with such concepts from the early stages of a strategic scheme through the ‘informal participatory process’ (Fig.61A). The role of drawings and planning is also very important. Most of the initial work of the institution is presented in maps and drawings to be understandable and more useful to the overall process (Carles Castells, Interview, June 2015).

‘After the initial plan, a new design/plan will be produced and a formal exhibition will be scheduled’, continues Castells revealing another significant part of this framework (Fig.61B) (Carles Castells, Interview, June 2015). The exhibition confirms the importance of pictorial forms in regional project frameworks and their key part in communication of ideas. Drawings are evaluated in public consultation, but can also be revised and redrawn by the designers if changes are necessary. It can be argued that this is a result of the exhibition/visuals evaluation stage that is integrated at the project framework as ‘formal participatory process’ (Fig.61B). The exhibition, held for a full month, acts as a way to engage the community and collect comments and suggestions that will help to shape the project and develop its conceptual and implementation strategy (Carles Castells, Interview, June 2015). To make clear how early in the process these ideas are introduced to the scheme, it is relevant to highlight that all the above actions take place before the stage of the ‘provisional plan’ and before approval is given by the local and regional administration (Fig.61C). By the point the scheme reaches the provisional plan stage, key ideas have been integrated and visualisations have been produced, evaluated by the experts in response to the public. In addition, the provisional plan is still processed, before it gets final approval and reaches implementation stage.

Land Planning Legal Scheme

Similar between regional and local scale

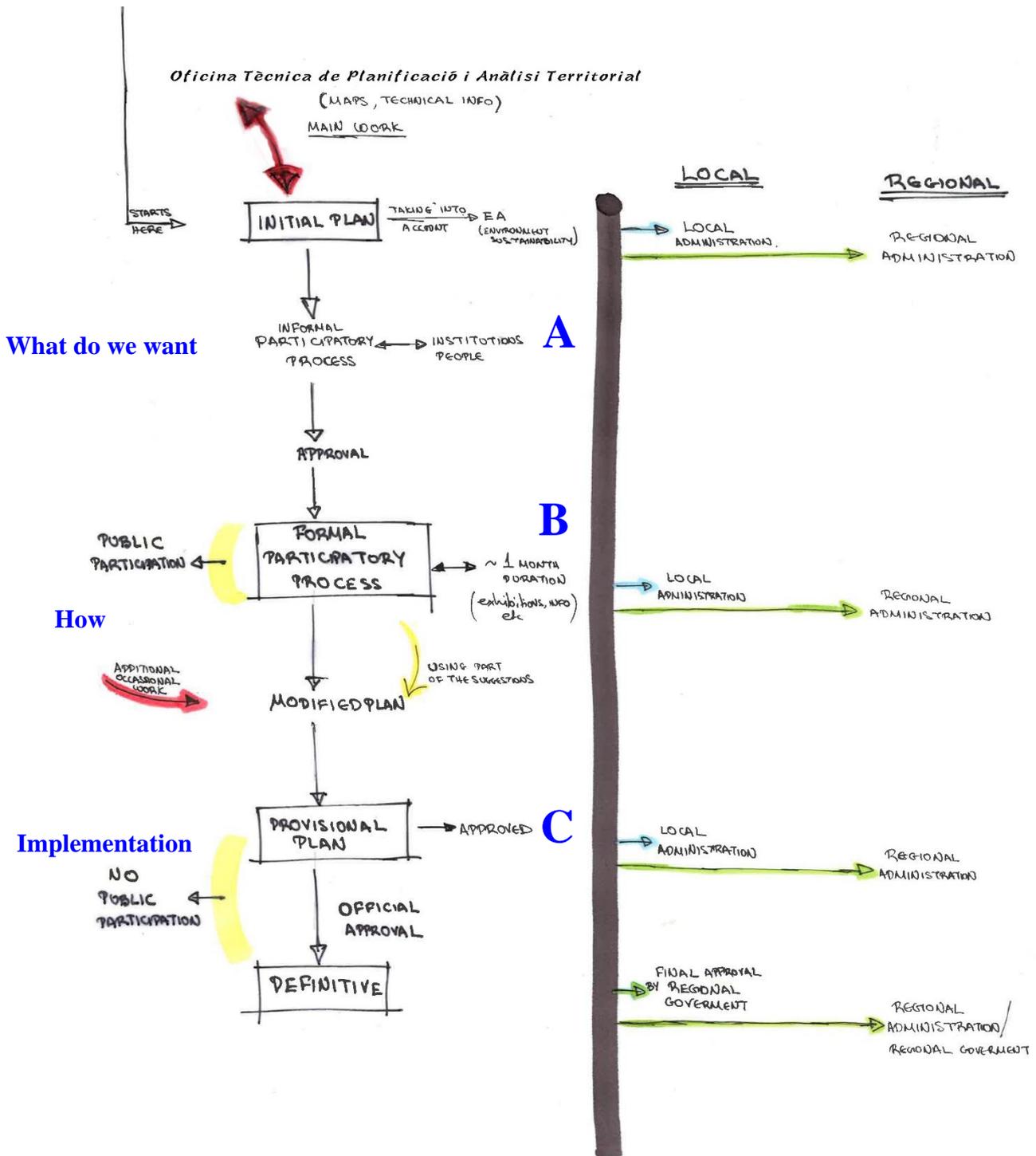


DIAGRAM CREATED DURING THE INTERVIEW WITH CARLES CASTELLS

Figure 61: Project framework example at the region of Catalonia including the main stages followed during the development process of a new landscape proposal. The framework the different procedures and actions followed from the stage of analysis to the implementation of a project. Source: Author's diagram based on information from Carles Castells.

Having examined the framework for strategic schemes in the region of Catalonia, the following example presents the project structure of a local spatial strategy developed with the guidance of the Catalan government and the Landscape Observatory. The Landscape Charter of Lluçanès (Fig.62) illustrates how a local scheme aiming for evaluation and improvement of the landscape can be established. It shows the challenging geographical location of the ‘natural region’ of Lluçanès, spread between three wider areas, and how this impacts on the development of a project framework (Laura Megias, Interview, June 2015).

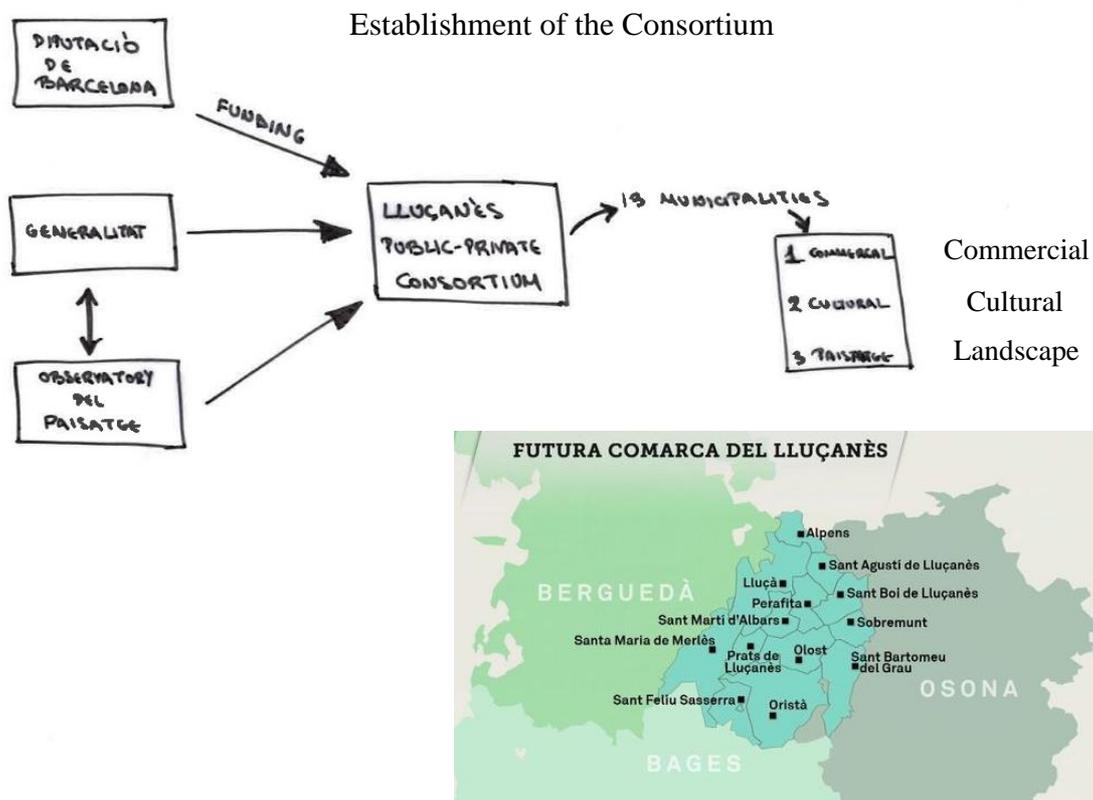


Figure 62: The diagram shows the initial foundation of the Lluçanès consortium, the three stakeholders that helped in its formation (Diputacio, Generalitat and Landscape Observatory) and the main ideas it is dealing with such as commercial, cultural and the landscape.

Lluçanès was established as a consortium to protect, manage and plan the landscape, while at the same time maintain its qualities and values of the area as Laura Megias (member of the consortium of Landscape Charter Lluçanès) states (Interview, June

2015). The preservation of the landscape character and the establishment of a project process grew from an idea to the consortium responsible for implementing a landscape plan. Figure 62 is a diagrammatic explanation of the three main stakeholders that helped during the establishment of the consortium as well as the three main aims that this framework addresses, the landscape (paisatge), cultural characteristics and commercial-social needs (Laura Megias, Interview, June 2015 and Xavier Sabaté Rotés, Interview, June 2015).

It also illustrates the natural region Lluçanès transitioning between the Plain of Vic and Berguedà, in the pre-Pyrenees (Fig.62). Although it is not an official ‘comarca’ (county) of Catalonia, Lluçanès has a rich historical, natural and social character that the consortium aims to preserve. Figure 63 illustrates the establishment of the consortium and the formation of the structure of the landscape project, including the process followed at the initial stages of the project. The first section (Section A) addresses the question ‘what landscape do we want’, aiming to establish a vision and a narrative that will lead, as Xavier Sabaté Rotés (advisor at Landscape Charter Lluçanès) explained, to the second phase ‘how do we implement it’ in a landscape scale (Section B) (Xavier Sabaté Rotés, Interview, June 2015). Similar to what was explained above about the structure of the scheme (Fig.62), the aims and objectives of the project, as well as the technical work undertaken, are the foundations of any landscape based strategy in the area of Lluçanès.

In this case the initial conceptualisation phase of the project aimed to secure ‘agriculture’, ‘urban environment’, ‘landscape and tourism’ and ‘learning about the landscape’ (Fig. 63, Section A) (Xavier Sabaté Rotés, Interview, June 2015). These topics formed the core of workshops and activities held by the consortium, aiming to raise awareness about the qualities of the Lluçanès landscape and promote the

landscape identity of the area. The interviews of Laura Megias and Xavier Sabaté Rotés revealed that the above elements aimed to preserve the natural landscape of this region as well as to enhance sense of place (Interviews, June 2015). The creation of a landscape vision, based on fundamental principles being the outcome of workshops between the local institutions and public as happened in the case of Lluçanès, is believed to be a very interesting approach in the development of landscape design and planning (Laura Megias, Interview, June 2015). Regarding the selection of the workshop topics, Xavier Sabaté Rotés (Interview, June 2015) stated that ‘the selection of these four topics is based on a logical or conceptual understanding of what the main elements of Lluçanès are. They have to do with the landscape and specifically with rural landscape of the Lluçanès area’. He also clarified that ‘technical work had occurred before this decision [was] made. There was a diagnosis [*sic*] about the landscape that helped identify the main issues’. Building on this, Laura Megias (Interview, June 2015) highlighted that the agricultural and touristic topics are the two main resources of the area of Lluçanès, but the consortium decided that the ‘learning about the landscape’ theme workshop (called ‘education’ in Fig.63) would be a fundamental step towards the socialisation of the landscape idea, while the ‘urban landscape’ theme relates to the ELC definition that urban landscapes are also landscapes (Council of Europe, 2000).

The framework introduced by this process has led to the identification of 35 principles (e.g. a feeling of belonging, a landscape that inspires responsibility, a culture of civic participation for the management and conservation, research and learning based on the working landscape and more) in relation to the Lluçanès landscape, which will be established and secured in future steps of the Landscape Charter initiative of the area (Xavier Sabaté Rotés, Interview, June 2015). Even though this project framework has been identified as very dynamic in the establishment of concepts, such as landscape vision, landscape identity, sense of place, quality and environmental sustainability, there was no visual representation at this initial stage. However, the interviewees have revealed that maps, images and visuals were used during the workshops. Xavier Sabaté Rotés explained that ‘maps and pictures were not used as working tools, but mostly to help people get into the project idea and understand the concepts’ (Interview, June 2015). In addition, Rotés revealed that the design of a map illustrating the different values, principles and actions taken for the landscape in Lluçanès was planned for the following stages of the project (Interview, June 2015), highlighting the fact that visuals enhance communication and understanding of landscape concepts. The example of Lluçanès demonstrates that an alternative project framework that included the values and principles of an area (e.g. quality of life, attractive and known landscape, a landscape that inspires attractive economic activities, entrepreneurship and more) (Appendix 14) is also feasible on a smaller scale and has great potential in ‘shaping’ the future steps, resulting to a successful landscape strategy. The challenging location of this scheme, since Lluçanès is part of three counties, is another indication that a sound framework has beneficial outcomes even in cases where the process has to be developed between various natural characteristics and legal entities.

The strategy of the Room for the River (Fig.64) also demonstrates a variety of key actions based on a strategic project framework. This framework focuses on key concepts such as hydrological efficiency and spatial quality, the way in which they have been carried through from the beginning to the implementation phase of all the individual landscape projects and the stakeholders that are involved. Drawings have a significant role in this strategy, communicating ideas and engaging stakeholders throughout the process. Figure 64 was drawn by the researcher with the help and guidance of Jan van der Grift (Senior Advisor for Spatial and Environmental Quality of the Room for the River), during his interview (July 2015). The programme framework developed for the Room for the River illustrates how the different parties communicate and collaborate securing the goals set by the administration. It deals with the integration of conceptual ideas being developed across the different projects and the way in which they can be secured during the landscape process. The main bodies illustrated in this diagram are the 'Programme Office', the 'Landscape architecture team embedded in the Programme Office', the 'Water management team', the 'Spatial Quality team', the 'Deltares – external quality and sustainability team' and of course the 'landscape projects'. Additional institutions, organisations and individuals have taken part in various stages of the programme, however this diagram aims to present the stages for the main actions of the scheme.

Van der Grift explained that the Programme Office and each individual project are responsible for the final decisions in the landscape scheme, however the other bodies participating in the programme, such as the Deltares or the Quality team, evaluate specific quality elements (Jan van der Grift, Interview, July 2015). The Landscape team has a continuous role between the Programme Office and the Quality team, supporting the project development. The Water management team is embedded in the main

structure of the scheme and it is responsible for the evaluation of water safety, sustainability and low carbon elements. The external quality team ‘Deltares’, which is responsible for a second evaluation of the environmental aspect, also secures the water management.

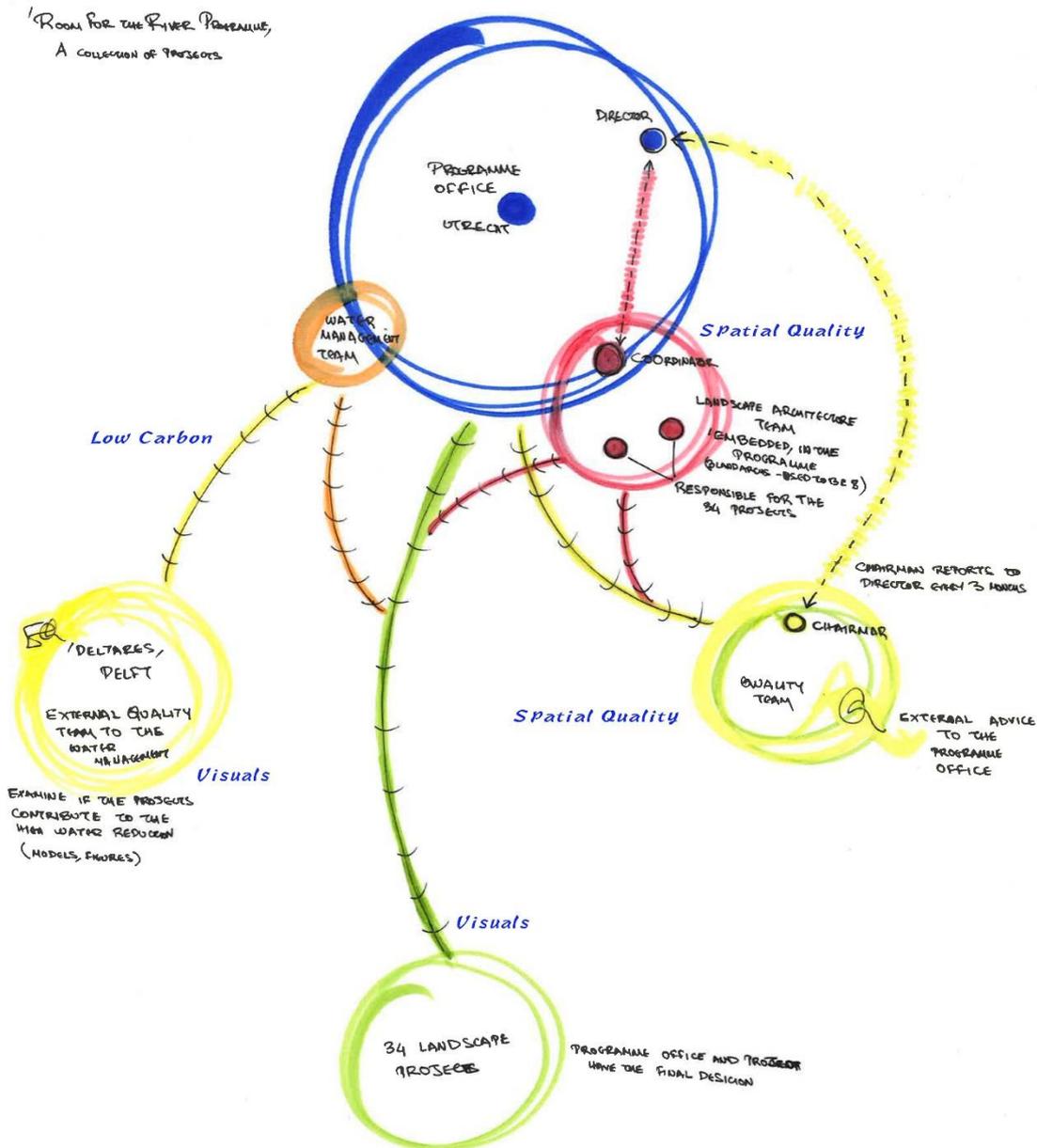


Figure 64: Programme framework for the Room for the River illustrating the main bodies participating in the scheme and the way low carbon and spatial quality are integrated in the developed framework. Source: Author’s diagram based on information from Jan Van der Grift.

The Quality team has a very important role, evaluating the level of integration of spatial quality and sustainability in each individual project, ensuring design quality across the whole strategy. It has also an advisory role reporting back to the Programme Office and collaborating with the Landscape Architecture team (Jan van der Grift, Interview, July 2015). Observations and examination of this model in practice, have shown that key issues such as spatial quality, environmental sustainability and hydrological efficiency have been introduced to the strategy from the early stages of the process, giving the opportunity for individual teams of the Room for the River to understand and interpret them fulfilling the needs of each location. As shown in Figure 64, the key concepts of this scheme, hydrological efficiency (interpreted here as water safety) and spatial quality, are playing a vital role in shaping the vision for the landscape design, while the same time they are being obtained every stage of the process, from more than one professional body.

Drawings had a major part on the scheme and designers had a close relationship with the administration throughout the process (Dirk Sijmons, Interview, July 2015). It is important to highlight that both the external quality team 'Deltares' and the main Quality team use models and visuals during their work on this regional Programme. The evaluation of the significance for the Room for the River project framework, and its contribution to the development of the scheme highlighted by interviewees (Jan van der Grift, Interview, July 2015 and Dirk Sijmons, Interview, July 2015) are important evidence that frameworks which integrate, drawings and quality concepts are beneficial for large-scale developments.

The example of Noordwaard reveals the administrative collaboration in one of the locations of the Room for the River project, demonstrating that a 'shaping the project' structure is not only needed in the broad scale, but also in different local, county and

regional levels. The Ministry of Infrastructure and the Environment (the Netherlands) established administrative collaboration that was set as a partnership agreement with: the Ministry of Economic Affairs, Agriculture and Innovation, Werkendam City Council (near Noorwaard), Rivierland Water Board, Province of North Brabant (province of Noordwaard) and the Department of Public Works South Holland (Martin Hoenderkamp, document provided by Annika Heselink).

The example of HS2/HS2LV case study is another illustration of what this section is suggesting, regarding the establishment of a different model of ‘shaping the project’ process. HS2 was initially focused on a high-speed railway line that, due to the existing structure and policy, was going from the macro scale of the scheme right down to a very detailed level of specifications (Kathryn Moore, Interview, June 2016). The development of the design vision (Appendix 7) addressing, as Brintrup explained, ‘people, place and time’ is a step towards a different mindset that considers the social and cultural impacts of the scheme (Christop Brintrup, Interview, January 2016).

In contrast the HS2 Landscape Vision, set to raise awareness of a different approach, proposed that a design concept, a narrative, sense of place and the vision for sustainability should be part of an initial framework in order for it to be successful and enhance social, cultural and economic development. As both HS2 and HS2LV are at the design phase of the project process, diagrams of the project framework are not available. However, research observations reveal a change of the initial process set by HS2 Ltd., towards a different approach integrating ideas that have been communicated by the HS2LV proposal (Kathryn Moore, Interview, June 2016). The design vision and the design panel (§6.5) have introduced a different way of thinking in working groups and participation processes and with an act of Parliament, HS2 received Royal assent (Act 2017 c.7, 23rd February 2017).

6.5 Policies, politics and the landscape scale project

Van den Broeck (2008) suggests that ‘in most countries present spatial planning is mainly ‘control-based’, using traditional bureaucratic instruments: legal land use plans, rules, prescriptions and bylaws defining ‘what can and what cannot’, having little involvement with the vision and the narrative of the project and showing little interest to the potential of the landscape. Policies, laws and legislation are all important aspects of the landscape development. The political dimension facilitates the landscape project, and impacts on political actions to the landscape design and the whole region. This section suggests that there is a series of important steps (clarification, shaping the project, politics, policies, institutional involvement, and timing) in order to secure the delivery of the key qualities and elements. As previously discussed (§6.4), design needs to be established as a requirement of the project framework (Christoph Brintrup, Interview, January 2016) for the scheme to be able to respond appropriately to the setting and the social and cultural needs of the area. What is being argued here is that to have a framework that has ‘the power’ to shape the project, political will and legislation are needed in the first place. This research argues that politics can and should enhance sustainable development and sense of place. The UK National Planning Policy Framework states that ‘plans should develop robust and comprehensive policies that set out the quality of development that will be expected for the area. Such policies should be based on stated objectives for the future of the area and an understanding and evaluation of its defining characteristics’ (DCLG, 2012).

Explaining how politics impact on regional schemes and what design is able to achieve, if given the required attention, Bart de Zwart said that ‘we may conceive a regional

design as an actant⁸ following a political trajectory. An actant that in the course of this trajectory, influences other actants, altering beliefs about the region and the issues it represents. [...] Such a framework may not only help to scientifically determine how design enables issues to become political, it also opens up the possibility to rethink the societal relevance of design practice and design expertise' (Zwart, 2015). As pointed out earlier, a project framework that will integrate the elements of spatial quality, sense of place, low carbon and pictorial forms is important in order to enhance the development of a narrative and to secure the extent to which these ideas will be implemented in the landscape scheme. However, the support of politics and institutions is essential for the successful establishment of such a mechanism.

The pioneer schemes examined have developed individual project frameworks that suit their aims. This could not have been achieved without strong support from the government and the creation of new laws and legislation for the landscape projects (Pere Sala, Interview, June 2015 and Dirk Sijmons, Interview, July 2015). Legislation established in Catalonia and the Netherlands introduces new ideas and concepts to protect and identify landscape characteristics. In the case of the Landscape Observatory, Nogué et.al (2016) explain that the Law 8/2005 of 8th June (Decree 343/2006) 'establishes that, once the landscape catalogues, classification and characterisation have been approved [...] they will be incorporated in a regulatory way as landscape directives [...] in the territorial masterplans that the Ministry of the Territory and Sustainability considers appropriate, after public consultation'. Concepts such as spatial quality and low carbon need this support to be able to integrate to the scheme, and as Mathieu Schouten has stated during his interview regarding the Dutch

⁸ a person, creature, or object playing any of a set of active roles in a narrative. Term commonly used in Latour's Actor Network Theory.

Room for the River that ‘there is more flexibility to talk about concepts like spatial quality, if it’s defined by the government’ (Interview, July 2015). In the UK, HS2 might not have achieved the development of an Act of Parliament, but several initiatives considering the sustainability and quality of the railway line, such as the HS2LV and the sustainability policy, have started to emerge. As a result, issues like landscape identity, low carbon and spatial quality can be identified as fragile elements that need the support of a legislation in order to be embedded in the landscape strategy.

Highlighting the importance of procurement processes in the implementation of landscape design, Moore (2010a) has stated that ‘to have any real chance of providing a sustainable and lasting blueprint for the landscape, this way of working needs to become wholeheartedly absorbed into all of the decision making institutions and organisations responsible for policy, strategic or regional planning at a national or international level’. The case studies have illustrated that legislation and politics in relation to landscape design can be a way to engage with the land and the region and guide the development of a new way of thinking as well as acting both in public and private sectors. Both Catalonia and the Netherlands have made significant progress in the interrelation of politics and the landscape, as the case studies revealed, changing public opinion and establishing specific laws for the landscape scale.

The region of Catalonia is a significant example of moving from the old legislation for the land and the landscape to the establishment of a law looking at the landscape as a whole, as Carles Castells explained (Interview, June 2015). He stated that in the last 10 years, there is a significant interest for the regional scale resulting to a regional planning strategy and given official approval for planning legislation in 2009 (Carles Castells, Interview, June 2015). A broader plan of action including local and urban plans was developed creating a holistic vision for the Catalan landscape. Castells stated that a

legal scheme to combine the three main different scales, the three visions and the three approaches to one single law is currently under development. ‘The idea is to have a law combining land planning (one law), urban planning (another law) and landscape planning (another law)’ (Carles Castells, Interview, June 2015) where they all belong to a broader scheme in which landscape is the core idea of design and planning (Fig.65), including the regional and urban scale.

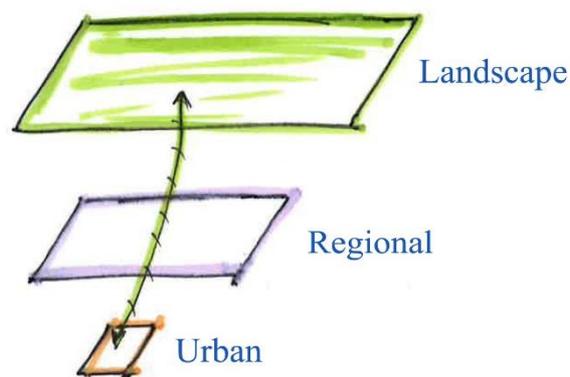


Figure 65: Diagram showing the relation of the three scales that will be combined in one law. The landscape law will be above the regional and urban laws giving emphasis to the idea of landscape.

‘The idea [of this new law] is to probably be more flexible in terms of the planning, not to be so strict and detail deciding ‘this piece of land will be this, this will be that’, but always ensuring that the basic needs are covered’, explained Castells, presenting how such a law would operate in Catalonia (Carles Castells, Interview, June 2015). He also clarified that this legislation ‘will look at the vision and function for the future and not only [aim] for preservation of the current scenery’ (Carles Castells, Interview, June 2015). Aligning with a major part of the Catalan ideas, this research suggests that a landscape law should act as guidance to ensure the delivery of the landscape vision and key qualities. A landscape law would be about creating a milestone in the project process of regional planning and design. It might be challenging to achieve, but there are pioneer institutions and projects from which we can learn. Furthermore, Catalonia

has moved one step further, in recognising that the existing law is not dealing to any great extent with concepts such as sustainability and ecological sensitivity but, as Castells suggests, ‘we have already started working on new legal schemes integrating these ideas’ (Carles Castells, Interview, June 2015).

In the case of HS2, Tony Burton suggests that ‘expressing that sort of political need through design wouldn’t have happened if there had not been some experiences elsewhere that had helped both negotiate a political space and also provide practical mechanisms to ensure effective delivery’ (Interview, September 2015). Bart de Zwart, tackling the importance of politics in regional scale design states that ‘one of the challenges of working and designing at the regional and national scale is to politicise the region, to make an issue’ (Interview, July 2015). He adds that ‘the region does not really exist, but you have to create it and you also have to create it in terms of being a political fact. So, the region has to become something that people have an interest in. And this is one of the big challenges for regional designers, to make the regions political; but not political in a narrow sense, but in a way that designs will help a region to become a political object’ (Bart de Zwart, Interview, June 2015).

The Room for the River and the New Dutch Waterline programmes highlight that the integration of drawings into the legal scheme in the form of law can enhance the way in which large-scale landscape projects are conceptualised, designed and delivered. Dirk Sijmons explained that the Dutch parliament agreed on the whole operation for the Room for the River and it has also integrated the concepts of water safety (equates for low carbon) and spatial quality to the law especially developed for the scheme (Interview, July 2015). The European Climate Adaptation Platform explains that ‘the old policy [in the Netherlands] was based on discharging surplus water to the sea as quickly as possible, the new policy became to first retain water, then store the water

and finally discharge the excess water. The new water policy was later linked to nature development and implementation of the EU Water Framework Directive' (ECAP, 2014). Similarly, the New Dutch Waterline fulfilling legal requirements with key issues, secure their integration to the process and their implementation in the scheme (Dirk Sijmons, Interview, July 2015). This political dimension, either in the form of law or other legal requirements, has been a very significant step in the socialisation of the key ideas, helping raise awareness, as well as integrating concepts into the project process. As Gobster et al. (2007) state, 'appropriate design, planning, policy, and management can create aesthetically attractive landscapes, achieving ecologically beneficial landscapes that are also culturally sustainable', emphasizing that a dialogue between policy makers, designers, planners and developers should be established when the aim is to generate sustainable regional landscapes.

HS2/HS2LV has given the opportunity to the researcher to follow the scheme from an early design stage, understanding how large-scale infrastructure projects are being developed and how this can improve in the future. Even though there is no implementation stage yet, unlike in the cases of the Catalan and the Netherlands landscape projects, HS2 is a very good example of how politics impact on large developments participating in more than 110 public meetings (<https://www.gov.uk/government/collections/hs2-events>). Spain and the Netherlands are moving towards laws and policies that consider landscape in a broader concept, but Sadie Morgan (HS2 Design Panel Chair – DRMM) has pointed out that there is currently no law of this type in the UK. However, 'HS2 has attempted to, in some way, put together a framework that local authorities and various stakeholders can look to, known as landscape vision' (Sadie Morgan, Interview, October 2015). So it might 'not

be a law that enforces that happening’ as Morgan says (Interview, October 2015), but there are actions considering the benefits of a broader framework for the whole scheme. Kathryn Moore (Member of the HS2 Design Panel/Founder of HS2LV/IFLA President), commenting on the political dimension of the scheme as well as the importance of governmental support for such large-scale infrastructure projects, stated that people understand what is proposed from a landscape design perspective, but ‘the governance mechanism to make this happen is not there yet’ (Kathryn Moore, Interview, June 2016). Highlighting the importance of governmental support, Moore also explained that the difference between HS2 and HS2LV is that ‘HS2LV is about galvanising local support, local communities, politicians, regional decision makers, national decision makers and international decision makers to take part in a great extraordinary project’ (Interview, June 2016). It is about enhancing a concept of a large-scale scheme in such a way that it can change people’s minds and perceptions about the overall scheme. It is argued that drawings and visuals are important mediums to convey these messages. Aligning with what was suggested by Bart de Zwart, Moore explains that ‘HS2LV is a regional diagram, a drawing, that has been incredibly influential because it shows the region in a different way... people hadn’t seen the region in this way before’ (Interview, June 2016). This is the point where public engagement can shape the project development and impact on the way in which this is going to be facilitated.

6.5.1 Policies and ‘shaping the project’

Even though this research is not looking at politics in depth, this section will present findings on policies that have an impact on the conceptualisation of the landscape scheme and on the way in which this affects the delivery of the project itself as well as

the broader region. As explained in Chapters 4 and 5, this research argues that drawings, low carbon and spatial quality are intertwined elements of a sustainable landscape project and therefore they should be examined as a holistic conceptual idea in cases of landscape strategies.

The need for a new approach has been highlighted by Torres and Pinho (2011) who stated that ‘Europe is facing difficulties in meeting its overall carbon reduction target set under the Kyoto Protocol. In that context, new policies need to be sought’. This research suggests that policies in landscape strategies need to be seen in a broader context that interacts with the ‘project framework’ as well as the governmental support. It is only when ‘landscape design and related planning, policy and management activities may be used to intervene to bring aesthetic and ecological goals into closer alignment’ (Gobster et al., 2007) that key concepts examined by this research can be successfully delivered in regional landscape projects. But the questions here are; do any of the pioneer case studies aligns with these suggestions or do they remain a theoretical consideration?

The data collected show that the pioneer case studies have often tackled such issues, however there is a variability in policies since drawings, low carbon and spatial quality are addressed individually as part of the legal schemes of strategic landscape projects and not considered as a part of a broader concept. Jeroen de Vries using the example of the Room for the River stated that ‘the Room for the River is in that respect, very good, because it was a very good design and the good thing is that it influenced the policy making of the government. So only by presenting this image and showing that we should approach the river in different ways. I think this is a good example of large-scale representation. Then policy decision, government decisions and then working it out in a smaller scale. I think this is a very good example’ (Interview, July 2015).

Evidence from the Netherlands shows that the Dutch system appears to be more progressive in the integration of such concepts, having as a result the implementation of national landscape projects such as the Room for the River and the New Dutch Waterline. But for this to be implemented, policies need to be in place to support the management of the process. The interviews and the case studies suggest that without policies in place, drawings and design are getting lost in the already-existing process, almost like a habitual process, which neither focuses on the narrative and the vision, nor the impact that visuals have on the final outcome of a landscape scheme. The fast pace with which the project framework must be established makes it even more intolerant to changes.

The lack of policies and the importance of their presence in a regional landscape strategy has been pointed out in various cases by the interviewees, explaining that they had a very important role in the pioneer projects examined (Jeroen de Vries, Interview, July 2015 and Dirk Sijmons, Interview, July 2015). Data presented below often discuss the key ideas individually and therefore it is possible that they will either tackle drawings and design or other key elements in relation to policies. The reasons why something like this has happened is firstly that the interviewees responded better when they had to analyse each concept separately, and secondly that the holistic approach this research suggests is only addressed in the pioneer case studies, and therefore the comparison with current policies is often rather difficult.

Visuals and pictorial forms of a strategic landscape scheme are often not shown during the first stages of the process (Christoph Brintrup, Interview, January 2016). Even though drawings are fundamental for designers and landscape architects in establishing of the core ideas and the development of the design, visuals are often perceived as threatening by the administration team and avoid being shown to the public or any

individual outside the project team. Brintrup has stated that ‘the last thing we want is to confuse the public and produce something that it’s drawn and the next revision is coming in and it looks really different [...] Some things have been released to the public, some have not’ (Christoph Brintrup, Interview, January 2016). Bart de Zwart, borrowing a phrase from Salewski and Paine (2012) explained during his interview (July 2015) that ‘many projects of the period are, to date, being credited for the visionary power, as well as their ability to channel ‘societal will’ into comprehensive planning schemes’. Drawings can be so powerful that they can influence the political argument and therefore there is a debate about their use in landscape strategic schemes. Drawings can impact politically in the development of a regional landscape scheme and the establishment of policies and how the project is conceptualized and shaped (Jeroen de Vries, Interview, July 2015).

On the contrast, Brintrup stated that ‘no matter how good a drawing could be, it would be easily overlooked if it is not considered important for the process and the overall argument’ (Interview, January 2016). Thus the pictorial and visual forms that are commonly used by large-scale developments are apparently less valued despite the fact that they can be very influential. Very often they are technical drawings or basic plans aiming only for the quickest possible delivery. This is where policies have a negative effect in landscape design, considering it as ‘not important’, when legislation could help express and secure a supportive argument about the integration of design in landscape schemes.

In cases where drawings are used as part of a sophisticated process instead of a necessary technical step of the process (e.g. pass through the legislature), they are able to add value to the design and the whole scheme, as the landscape programmes of the Room for the River and the New Dutch Waterline have shown. According to Dirk

Sijmons, ‘designers are often lonely in this, let’s say, technical realm’, tending to be dominated by engineers, finding it challenging to communicate ideas about the project and often losing the argument between politics and design (Interview, July 2015). For that reason, both the Room for the River and the New Dutch Waterline have embedded drawings and visuals as part of the project framework, exploring how this can benefit their political agenda.

Spatial quality, water safety, hydrological efficiency, community engagement and landscape preservation are addressed in the policies and legislation of these national programmes, helping to ensure their integration within the narrative and therefore their successful delivery within the scheme (Noordwaard bureau – Ralph Gaastra, document provided by Annika Hesselink). Increasingly it is recognised that ‘there is no alternative for countries but to incorporate low carbon measures in their development policies. The reality of climate change demands it, and there are also clear benefits in pursuing such for policies’ (Mulugetta and Urban, 2010). Moreover, looking towards climate change Torres and Pinho (2011) emphasise that ‘climate change is a global threat but local and individual actions are essential to mitigate it’, encouraging the development of low carbon policies on local and national scales.

Even though most political arguments regarding low carbon and spatial quality are currently developed individually, there are a few examples linking them with landscape design. Landscape designer Steven Kamerling, who has started blending the concepts of landscape and low carbon under the same legislation, states that ‘topics like water and ecology are covered by laws and procedures, which means they have to be considered when planning new developments. It would be good if sustainable urban design was also included in planning legislation and procedures’ (quoted in Meijer et al., 2011). Interviewees have explained that the establishment of such policies will

elevate the concept of spatial quality from being the ‘extra mile’ or the ‘add on’ in a landscape project (Tony Burton, Interview, September 2015 and Christoph Brintrup and Tiago Dias, Interviews, January 2016) to a fundamental idea which the scheme would necessarily be based upon. In addition, it will encourage the integration of low carbon within the landscape vision, as happened in the Netherlands, and it will help drawings and design to be embraced for their ‘power’ in shaping the project and communicating the ideas to the broader audience. Clearly there is a need for policies to consider and address the integration of drawings, low carbon and spatial quality on large-scale infrastructure schemes. When the integration is possible the extent to which these ideas are delivered to the design and therefore to the final projects is much higher compared to cases which lack those legal frames (Christoph Brintrup, Interview, January 2016). Visuals can bring these concepts together since their power is to shape the project and possibly ‘make or break’ the political argument. Having as an example HS2 and HS2LV, one could argue that HS2 is about function and delivery, while HS2LV is about seeing the bigger picture and providing landscape identity. However, as Kathryn Moore points out during her interview, ‘infrastructure should not detract from the landscape in any way’ and policy can secure this (Interview, June 2016).

6.6 Impact on governmental values and management

By investigating the way in which the landscape projects were established and implemented, examples where the government has adopted new strategies and updated policies have been identified. The Landscape Observatory has managed to give a new dimension to the government’s policy (Pere Sala, Interview, June 2015). The coordinator of the Landscape Observatory, Pere Sala, has revealed that the Landscape Catalogues (Fig.66) have had a substantial response from the government (Pere Sala,

Interview, June 2015). The Catalogues (§4.2.1) have rigorous information about the Catalan landscape, giving data about tangible and intangible qualities of each individual landscape unit in the region. As Pere Sala explains ‘at the beginning it was difficult with the politicians, because they didn’t know what we were preparing. We were talking about the Landscape Catalogues and they were thinking it would be another document’ (Pere Sala, Interview, June 2015). It was difficult to demonstrate the concept behind the creation of the Catalogues without the use of visuals or maps, but their communication to the local and national administrative and governmental structures also proved challenging. The Landscape Observatory has changed perceptions about the landscape and it has also managed to impact on the Catalan society and the decisions made by the local government.

Pere Sala explained that, at the time, ‘landscape [was perceived as] something limited that forbids things’ (Pere Sala, Interview, June 2015) and therefore the creation of those new tools, known as Landscape Catalogues could only bring fear and opposition from the government. However, when the first example of the catalogues was ready, these perceptions started changing, to the extent that the region of Catalonia has now changed the way of thinking, design and project planning, in relation to the landscape (Nogué et al., 2016). ‘With the Landscape Catalogues the administration and governmental machine started being aware of the importance of the landscape, and now they are planning and firstly check [*sic*] on the landscape unit. This is something you couldn’t think five years ago’ states Sala (Interview, June 2015), emphasizing how the values of the Catalan government have been shaped by the Landscape Observatory.

This research argues that there are cases where the actions and ideas of such institutions can shape the policy. Some of these actions have also led to a restructure of governmental values, having a major impact on policies. This has started affecting how

the landscape is perceived by society and has also changed the way in which regional planning projects are being conceptualised and developed as happened with the establishment of a new law in Catalonia explained previously.

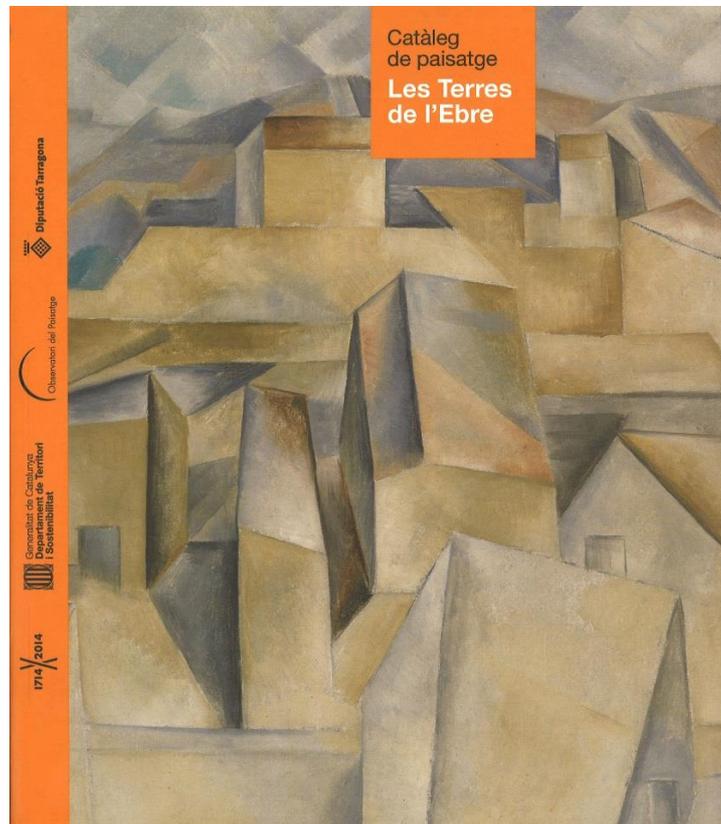


Figure 66: Example of the Landscape Catalogue ‘Les Terres de l’Ebre’. Source: Landscape Observatory.

Kathryn Moore, founder of the HS2LV project, explains: ‘HS2LV is using the idea of the landscape instead of the technology of the landscape’ (Interview, June 2016) having the ambition to change the region and create a sense of identity for the area. Transforming the UK’s largest infrastructure project from a linear engineering scheme to a holistic landscape idea aiming to improve quality of life for the area around the high-speed railway, HS2LV has managed to create a new way of conceptualizing the valleys around Birmingham (HS2 Phase 1). Ann Osola, Head of Growth and Strategy for Birmingham City Council, as an outside expert confirmation for HS2LV, has stated

that ‘this vision provides an opportunity for some of the most deprived communities to reinvent themselves in a way that has never presented itself before’ (Appendix 15).

In the early stages of the HS2LV project, government and policy makers were reluctant to embrace those new ideas, similar to what happened at the Landscape Observatory, however the effectiveness of visuals together with the urge for a more sustainable and quality approach has now changed the initial focus of the scheme aiming to a project that ‘could actually be a catalyst for social, cultural and economic transformation, creating an iconic landscape proposal’ (Kathryn Moore, Interview, June 2016). Having realised that the single ‘red line’ identified as the HS2 route (Fig.67) is restrictive for the successful development of such a national scheme, the government and local administration have now started looking at the wider landscape and the opportunities this creates for the region (Design Vision – Appendix 7). Mark Rogers, Chief executive of Solihull Council states that ‘it’s about saying to the people who live in and around Birmingham, there is going to be jobs, but also things of beauty, things to be proud of, things that in the future you’re going to look back on’ (Appendix 15). The drawings created to express the HS2LV concept have managed to change perceptions for the region. The conceptual and visual transformation of an engineering project (Fig.67) to a holistic landscape approach (Fig.68) has the potential to have a major impact on the way in which the government understands the land and handles the project development. HS2LV makes clear that the land is valuable, but there are many cases where there is little appreciation or understanding often resulting in poor decisions and developments. ‘For somebody who doesn’t understand the topography or the land, it looks like an open space where you can build whatever you want to build’ states Kathryn Moore (Interview, June 2016).



Figure 67: HS2 route for phase 1 (London–Birmingham) and phase 2 (Birmingham–Manchester & Leeds) showing the ‘red line’ where HS2 Ltd is aiming to operate. Source: Department for Transport.

The HS2/HS2LV case study shows that the HS2LV drawings have affected the way in which the UK government considers and plans future steps of infrastructure developments. Responding to the questions about why and how a diagrammatic drawing (Fig.68) has managed to have such a communication impact regionally, Moore states that ‘this drawing is an idea of the region that people haven’t seen before, [...] it is not an objective drawing in any way, is full of values, value judgements... and things are shown in a particular way to draw attention to particular things/areas or just as any drawing. [...] It’s based on a very careful research and observation of the area and then showed in a diagrammatic way, so it’s not so threatening’ (Kathryn Moore, Interview, June 2016). What HS2LV has managed to achieve is to give a series of exciting possibilities for the region, a narrative and a vision for the landscape that can engage with communities without micro-managing specific spots and areas in the land. Figure

68 'has been incredibly influential because it shows the region in a different way, people hadn't seen the region in this way before' states Moore (Interview, June 2016). That might be the reason why it has changed some policy and practice and it would be very interesting to identify how governmental policy will react to this.

A drawing, as happened with HS2LV, or instruments such as the Landscape Catalogues from the Landscape Observatory, can encourage discussion and raise aspirations in a way that will inspire communities and institutions to get engaged with the land and the region. But, as interviewees have explained, whether this comes from a drawing (HS2LV) or a whole series of ways where the quality is seen as the journey through a landscape (as in the Netherlands), the important thing is to put such concepts higher up on the political agenda and identify how these contribute to local problems, improving the experience of living spaces (Annemiek Tromp, Interview July 2015 and Kathryn Moore, Interview, June 2016). The case of HS2/HS2LV is of great interest, as this project has great potential to shape policies in future.

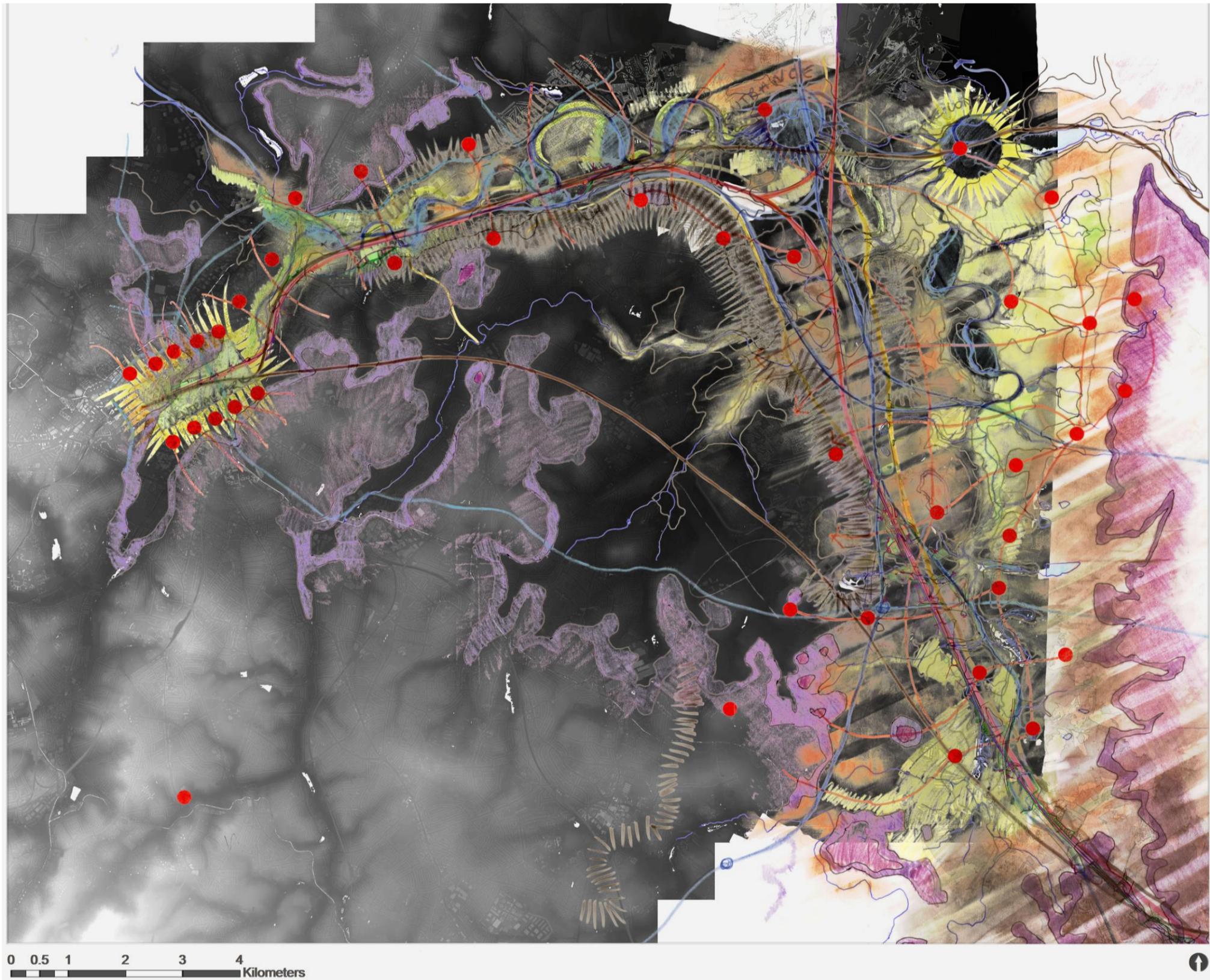


Figure 68: Drawing created to reveal the landscape identity and illustrate an iconic landscape for HS2LV proposal. Hand coloured geo-referenced and ortho-rectified drawing, 1m LiDAR data. Source: Kathryn Moore and Paul Cureton.

The Netherlands case study raises important ‘lessons learned’ for the Dutch Government. Jan van der Grift explained that since the integration of low carbon, spatial quality and drawings in the project framework is relatively recent ‘mistakes were made during the implementation phase’ (Interview, July 2015). Kathryn Moore is describing such a situation very well, stating that ‘to achieve that sort of integration of different projects, it needs to be led from the top and it needs to be supported from the bottom as well; it is a question of governance’ (Interview, June 2016). Having the government support was crucial for the Dutch landscape projects, however they have managed to come up with their own visions and ideas that as a result, have pushed the already progressive legal scheme even further to the integration of spatial quality (Mathieu Schouten, Interview, July 2015). For example, integrating spatial quality in both the New Dutch Waterline and the Room for the River brought new ideas, tools and legislation in the table. As Jan van der Grift explained, some of these concepts and ideas used are relatively new, and especially the concepts of spatial quality, low carbon and design had not been used in the same holistic way in such a large-scale project before (Jan van der Grift, Interview, July 2015). Thus this has a major impact for the future spatial planning and design policy of the Dutch government.

The Netherlands case study has shown that the general law on landscape quality and sustainability as well as the policies on landscape schemes have also been supported by other ‘smaller’ tools that are quite important for general administration. The example of the ‘Context Appraiser - Omgevingswijzer’ (Fig.69) was developed by the Sustainable Infrastructure Program with the collaboration of the Dutch Rijkswaterstaat and was shown by Annemiek Tromp during the interview (July 2015). As Tromp explained, the ‘Context Appraiser’ (Appendix 13) might look like a simple tool mapping the degree of sustainability in spatial projects, however at the same time it

intends to stimulate awareness and debate about how this is going to be achieved in a ‘structural way’ (Annemiek Tromp, Interview, July 2015). By evaluating sustainability opportunities for development areas and sites, it is improving the level of understanding and engagement with landscape concepts. For that reason, Tromp explains that the tool has been found useful to policy makers and civil servants, as a way to test values and ideas and explore new opportunities for local and regional areas (Annemiek Tromp, Interview, July 2015). The development of such a tool, that visualizes the impact a project on sustainability has proven an effective way to change governmental and management values in the Netherlands. It has had a significant impact on the Dutch system so far with policy makers and administration departments integrating it in their ‘planning framework routine’ (Annemiek Tromp, Interview, July 2015).

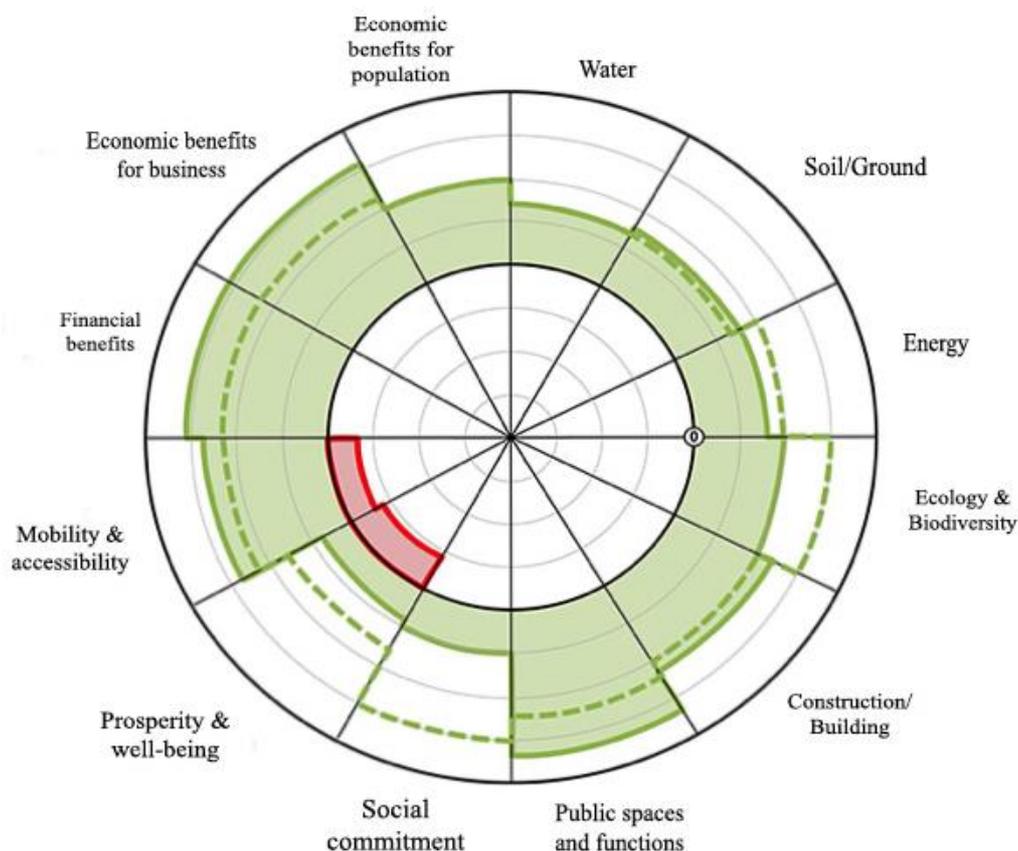


Figure 69: Omgevingswijzer – Context Appraisal. Tool developed by the Sustainable Infrastructure Program (in Dutch: Aanpak Duurzaam GWW) in order to help answering questions about when a project is sustainable. Source: Annemiek Tromp.

Thus, the important issue is about finding a way to engage the governmental structure to be successful. From the large-scale and high governmental level, right down to the local scale and project framework pioneer examples in Catalonia, the Netherlands and the UK have managed to explore new ideas, create visions and change perceptions about landscape design and planning. This section suggests that such initiatives are important aspirations and inspirations for strategic development, but also for promoting local, national and international legislation about the landscape.

6.7 Priorities of delivery

This section will present the issues of timing, early integration, identity and participation in relation to strategic landscape projects. It demonstrates that ‘right timing’ and especially ‘early integration’ of quality and low carbon are essential for regional projects and results to better integration and successful implementation of such issues.

One of the main outcomes of the Netherlands case study is that challenging concepts (eg. spatial quality, low carbon) can be effectively delivered when they are properly planned in the early stages of a landscape project. Figure 70 explores possible examples of such structures, trying to understand the project framework process as well as highlighting the importance of ‘timing’ for these key design elements. This diagram shows that successful implementation depends on timing as well as policies, illustrating that a narrative and the concepts of spatial quality and low carbon should be embedded in the early stages of the project process. Interviewees suggest that one of the mistakes made in strategic projects is that quality design is not considered early enough in the process (Christoph Brintrup, Interview, January 2016). Meijer et al. (2011) suggest that ‘setting targets at the beginning of a development process gives better results than

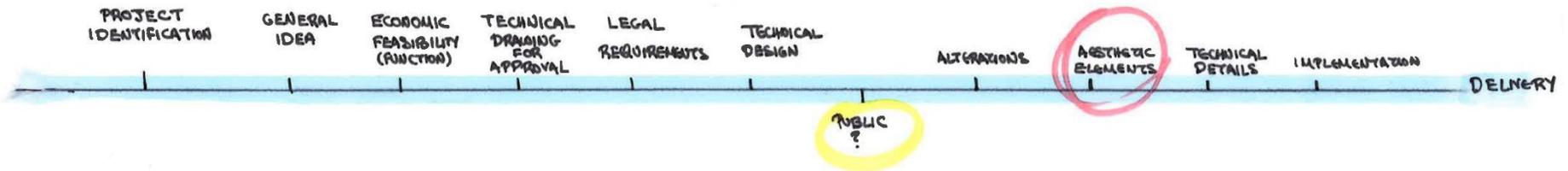
setting standards later on. Current regulations are far too rigid to be able to respond to the dynamics of spatial development'. With the early engagement and integration of design and quality elements in the scheme, the project has a better chance of developing a narrative, engaging communities and having a successful outcome.

Interviewees have also highlighted the importance of 'timing'. Dirk Sijmons emphasized that a certain design process was initially set for the strategic scheme, examining around 600 potential locations. The involvement of the designers from the early stages of the programme, made a significant difference to the way in which the ideas were unfolded and on how the scheme was developed (Dirk Sijmons, Interview, July 2015). Kathryn Moore, also highlighting the timing issue, emphasized that the development of a narrative through drawing will happen in the next phases of the HS2 scheme. 'I think the fact there is an Independent Design Review Panel shows the willingness to open up to scrutiny and a willingness and real desire to make it a great project', she explains (Kathryn Moore, Interview, June 2016). The HS2LV project has really been a crucial element demonstrating what a difference design makes and therefore the establishment of the design panel as well as the integration of those ideas in the next phases of the railway development, show a swift in processes and possibly policy.

All evidence indicate that landscape design is often overlooked during the initial stages, a fact that makes it an afterthought for the project framework and the administrative process (Tony Burton, Interview, September 2015 and Christoph Brintrup, Interview, January 2016). Early planning and the right timing are very important on strategic scales where the management of the project is much more complicated, involving numerous stakeholders and very complex processes. 'There is a need to extend our understanding of how to develop the quality of place in relation to the built

environment, infrastructure and gentrification processes' argue Fallström et al. (2009), trying to find ways on how 'sense of place' can be integrated to design and planning. It is not a simple question of developing a certain policy, but it is also crucial to consider when the best moment is for this to be put 'in action' in order to achieve the better outcome or the 'higher extent' to which this can be delivered in a landscape project. The suggestion made by this chapter is that policies and legislation are an important tool for regional landscape design which indicates that they are also able to support early involvement of the conceptual ideas in the project framework. It is believed that the integration of such actions within the legal framework will have impressive results for the way in which a project will be conceptualised, designed, and implemented.

Main Steps of Existing Process



'Early Integration' Proposed Process

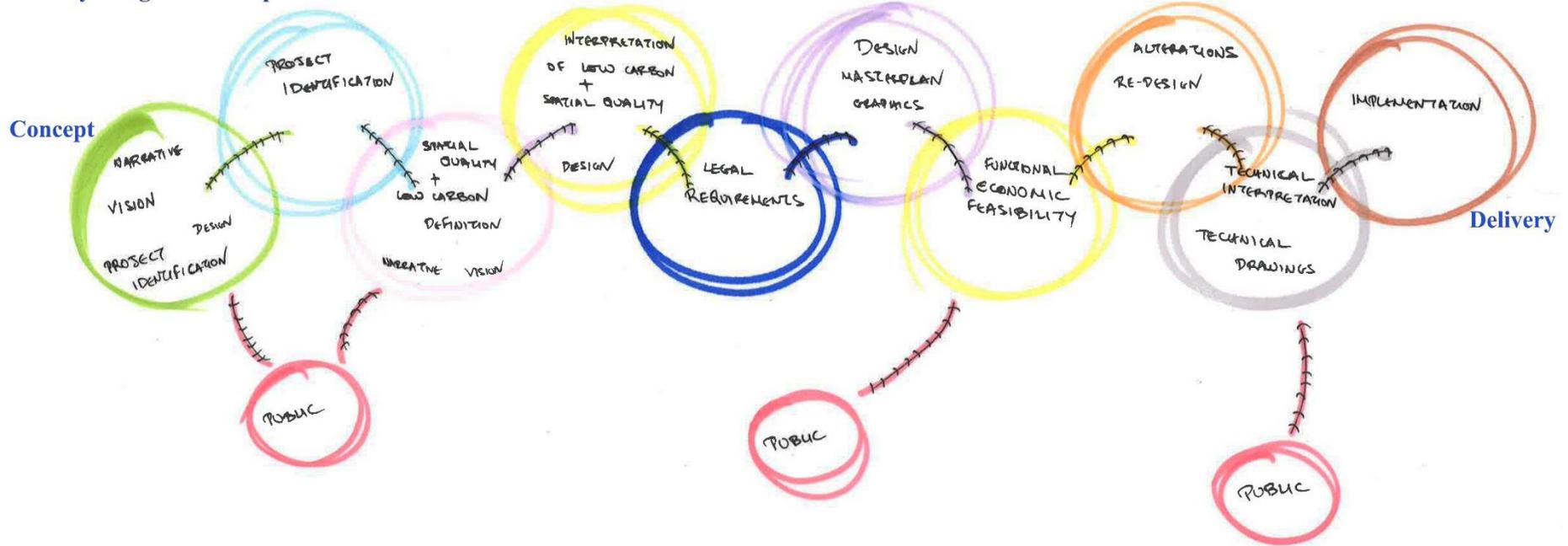


Figure 70: Integration process of spatial quality, low carbon and design in the project framework as might happen with the current practices and as proposed by the study. The researcher has created the diagram highlighting main actions of the framework without suggesting that there are no other ways or additional steps that might apply.

6.7.1 Participation processes

This section will discuss how other important elements of delivery can play a significant role in a project's implementation. Figure 70 emphasized timing and early integration of quality elements, however public participation is also important. Participation processes are a key element in regional landscape design (Mathieu Schouten, Interview, July 2015) and should be given a certain priority within the project framework. The lead landscape architect for the Nijmegen project explained that 'we did a lot of education [*sic*], excursions all these kinds of things. Sometimes we went to schools, sometimes the schools came in and they could freely walk [at the project]' (Mathieu Schouten, Interview, July 2015). Literature has pointed out that local stakeholders should be involved in spatial planning 'to prioritise green areas and future values' in spatial designs, especially because locals are the users of the area and they tend to be more connected to values and qualities of the space (Cilliers et al., 2011). However, Cilliers et al. do not deal with the integration of this within the project framework or about the fact that early engagement might shape the way in which the landscape scheme will develop.

The selected case studies have strong links with the public and participation processes from the beginning, to improve the understanding of the project, enhance local support and raise public awareness. Irene Navarro explains during her interview 'if you work with the people at the beginning or at least midway through the project, they feel that they can give their opinion and that minimizes conflicts' (Interview, June 2015). The timing of public participation is sometimes challenging, however case study evidence show that the engagement of local stakeholders and institutions at an early stage improves the level of engagement and therefore has a positive impact on the overall scheme (Room for the River and the Landscape Observatory). The early integration of

community engagement in regional landscape schemes can enhance the feeling of ‘proudness’ and help with the creation of a narrative and identity to the landscape (Mathieu Schouten, Interview, July 2015). A suitable balance between involving the local opinion as a tool to improve the designers’ knowledge on the area and enhance landscape identity, and a consideration of all the suggestions made by the focus groups without being evaluated, is important.

Other public engagement methods, such as local press and exhibitions have been used to enhance awareness and improve public participation. The Landscape Observatory obtained significant results in engaging with the community by collaborating with local press and publishing a newspaper on landscape (Fig.71), replacing all the images of a newspaper with landscape images in a way to disseminate the idea of the landscape (Pere Sala, Interview, June 2015). The consortium of Lluçanès has also used the press to engage local communities during the project process. As a result, the public and institutional engagement in landscape processes in these cases has shown a major improvement during the initiatives of the Landscape Observatory.



Figure 71: Local newspaper in Catalonia printing an issue on landscape with the collaboration of the Landscape Observatory. Source: Pere Sala.

6.8 Successful implementation

This chapter reveals that politics and policies have a significant role in regional design projects. The political dimension has emerged to a far greater extent than was originally expected opening discussions about the way we conceptualise the landscape and the region. The need to consider the political and legislation framework and how this impacts to the delivery of a project, is a significant finding. As Moore (2010a) has explained, ‘as designers, planners, policy makers and politicians we need to recognise that there is no choice but to engage with ideas at every stage of the development process, whether this is in the initial research or surveying the scene’. A strong supportive framework will undoubtedly benefit the implementation of the strategic landscape schemes and ensure successful delivery. The better understanding of the key concepts, as well as their early engagement in the process, will secure strong foundations for the establishment of a framework, and can have a tremendous impact on the delivery process and the final scheme. In addition, the importance of politics in regional landscape infrastructure as well as the establishment of existing and new policies and legislation related to sustainable design and quality of space have been explained and justified, aiming to demonstrate why such legal frames should be involved in landscape developments.

The clarification and interpretation of such ideas, as well as their early integration, through drawings, within the project framework is considered significant for their successful delivery. It can also be argued that the degree of effective spatial delivery of these fragile concepts depends on good communication and understanding that is also affected by their integration to the framework. The less clear and effectively a concept is interpreted, the less likely it is that key ideas will be successfully embedded in large-scale developments.

Participation processes and early integration of quality elements are considered equally important in the design and implementation of a sustainable landscape project. Evidence from the Netherlands and the Landscape Observatory case studies reveal that strong communication between the designers, the implementation team and the administration team is very important, in order for concepts and key messages not to be 'lost' or misinterpreted during the project development.

The case studies revealed that a landscape vision is often communicated through drawings and secured by legislation, as Nogué et al. (2016) explained. It is the narrative that will visualise key ideas through a story, giving a strong identity to the landscape scheme. The clarity of concept and effective methods of communication, introduced through the project framework are important indicators of the extent to which key elements are going to be integrated in the project process as well as the quality of their implementation. This research does not aim to become a political document, but to highlight the fact that drawings have been found to be far more political than was originally believed. The power of influential visuals is not limited to the decisions about the design concept or the elements but it can actually 'make or break' the political argument in such a way that the project can or cannot move forward. In landscape architecture, design and drawings are highly connected to policies and politics, however this has affected their use in the project process, converting them from communication tools to political discourses. This has also an impact in the ideas of spatial quality and low carbon that as interview evidence show are often overlooked in cases where there is no legal or project framework to secure their delivery in the scheme. Certain changes in legislation might allow design to become a key element for future strategic landscape schemes, aiming to quality and environmental spaces. For example, legislation can integrate the ideas of low carbon, spatial quality and landscape design in the same law

or policy for regional landscape design. In addition, it can create patterns/policies where the above fragile concepts are necessarily addressed during the initial stage of the project. The subject of legislation changes needs more detailed research because they might need specific legislation concept.

7. Conclusion

7.1 Introduction

The exploration of successful strategic landscape schemes in three countries in Europe has revealed contrasts between the three innovative case studies and identified good practice in each case. Characteristics extracted from each pioneer project demonstrate, that regional landscape developments can integrate qualities, and for them to be successfully integrated, a project framework should be in place. The systematic procedure followed by the Dutch, the dissemination process established by the Catalans and the argument that ideas and possibilities of a project can change illustrated by the British, have revealed a variety of beneficial elements when considering the establishment and delivery of a strategic scheme.

The aims of this study, to investigate the extent to which low carbon and spatial quality can be delivered in regional infrastructure projects and the way in which visual representations and pictorial forms such as drawings, diagrams and images change the way in which we conceptualize regions and their landscape potential, have been explored and evaluated, and conclusions will be presented below. The concepts of low carbon, sustainability and spatial quality, as well as their relation to drawings, have been investigated and evaluated using the expertise of the case studies, considering how they can contribute to the global challenges we face, the context within which policies take place and the overall sustainable development of large-scale infrastructure.

The new knowledge revealed by this research will be presented in this chapter, demonstrating key findings, the potential impact of the study and the way in which these affect practice in the field. Suggestions for future research and practice, followed by specific recommendations, will illustrate potential areas of further engagement that

will be beneficial to strategic schemes. A personal exploration of the research journey will follow, presenting the researcher's development during this process as well as future career steps.

7.2 Response to thesis aims and new knowledge generated

The process followed for the establishment of a strategic scheme dealing with the ideas of sustainability and spatial quality can relate to policies, communication and interpretation of key concepts, implementation processes and public engagement. The variability demonstrated between large-scale projects across Europe shows that the integration of low carbon and spatial quality at the strategic scale is feasible, and that drawings can affect the way in which a project evolves. Considering the physical, cultural and social characteristics of the area, the innovative case studies have managed to develop unique ways of delivery that suit their needs, integrating policies, legislation and various processes of project development.

Overall findings

- Current landscape practice is able to form theory
- The concepts of spatial quality, low carbon and drawings are flexible in interpretation but also fragile in their integration
- Policies, legislation and project framework all significantly impact on the decision making and the project process
- Policies need to be in place to support a project framework and fragile concepts
- An alternative project framework is needed in regional landscape practice, because what already exists does not seem to work very well in climate and environmental aspects

- Early integration, early engagement in the project and timing are all significant for successful delivery and establishment of the project framework
- Drawings and other visual materials are very effective in communicating a vision, a fact that is much more significant than was originally thought in the early stages of the research
- Drawings can better influence the decision making when they are not perceived as threatening and are integrated early in the process
- Abstract drawings are considered more effective in large scale projects as they intentionally exclude less relevant information
- Drawings were used less in regional projects, despite the fact that they were considered powerful. This has an impact on decision making in the projects
- Even if they are considered relevant, important and powerful, the fragile concepts of low carbon, special quality and drawings can be easily overlooked if not tied down to a project process/framework supported by policy
- Drawings are far more political than was originally believed

Contribution to knowledge

Presenting the innovative practices and key elements extracted during the case studies, and making the link with what has been discussed in the literature, this research evaluates the effectiveness of decisions made and processes followed. Therefore, the contribution to knowledge is in identifying ways to strengthen those areas, creating sustainable strategic schemes that work effectively, positively affecting the way in which regions and landscape areas are conceptualized and addressed. This has a multidisciplinary impact not only on the administration level, and legislation developed across Europe, but also an impact on the environment and the overall landscape and

planning procedures (the way in which landscape design is being taught and dealt with by practice) and policy. The suggestion made by this research, that an alternative project framework is needed, focuses on the importance of concepts such as low carbon, climate change, spatial quality and visual representation. Therefore a process that will successfully provide integration of all these individual elements to a large scale scheme will be a step towards long-term and real sustainable implementation and a formula to more clearly address climate challenges through landscape architecture. The establishment of the drawings as a necessary step in the early stages of the landscape project process is highly likely to improve the understanding of all the individual elements of the project for both the designers and the public, and also create new ways of communication in place of an approach that is nowadays often thought of producing threats. The thesis suggests first that policies, legislation and the establishment of a project framework all impact on the extent to which key ideas are being delivered in strategic scale, and secondly that drawings play a significant communication and interpretation role for those concepts, allowing better integration in large-scale strategies. Successful delivery is not a one-way process, and requires the engagement of various actions.

The establishment of a project framework that addresses the needs of each project individually is considered necessary, but it requires support from policy and governmental legislation in a broader scale. A common governmental agenda and European or International legislation is believed to be important for the establishment of the project framework as the driving force in strategic schemes. This research suggests that a different way of delivery or alternative project framework needs to be in place; however it does not propose a specific model since the case studies have shown the range of successful schemes. Policies and procurement processes also need to be in

place to support the establishment of the project framework and secure how key ideas are embedded in this framework. It is acknowledged that policies and legislation are significant tools for the formation of a project process, and they can also enforce the engagement of fragile ideas that will significantly impact on successful delivery, such as drawings and communication, low carbon and spatial quality concepts. Instilling such concepts in the early stages of the project framework also benefits strategic implementation.

The integration of the low carbon concept at the strategic scale is becoming an ethical and social responsibility of our times, something that was scarcely considered when Cosgrove (1998:2) wrote that ‘landscape today is pre-eminently the domain either of scientific study and land planning or of personal and private pleasure. It no longer carries the burden of social or moral significance attached to it [...]’. But low carbon has also a social and moral significance that relates to the landscape and it needs to be seen in a different perspective than just the technocratic and technological innovations that have dominated academic discourse in recent years. It needs to be a responsibility of anyone who is dealing with the landscape, no matter the scale. The ‘assimilation’ of key concepts at the beginning of the process improves understanding, interpretation and successful engagement, and therefore it secures their delivery in the final design. Since drawings, low carbon and spatial quality are flexible but also fragile concepts, their interpretation can result in a variety of spatial examples and sometimes can even be overlooked, thus their ‘bond’ in a policy framework will have a major impact on the extent to which are being delivered. The establishment of a different project framework, supported by policies and legislation considering all the elements discussed by this research, will have a significant impact on the way in which professional practice and politics deal with large-scale developments.

7.3 Drawings and project delivery

The evaluation of the role of drawings and visuals in the project delivery depends on the examples of effective visions conveyed through drawings, as the case studies have revealed. Pictorial forms are a strong communication tool which can be used to interpret key concepts, improve spatial understanding and implementation outcomes: therefore, this research suggests that drawings significantly benefit delivery. The unique interpretation of key ideas for each landscape area, and the ability of drawings to ‘materialise’ or give them a spatial dimension, can be advantageous to the delivery of strategic schemes, since this affects the way in which they are perceived and therefore the decisions made for the landscape strategy. As shown by the case studies, effective visuals can change perceptions about the development of a region and therefore influence decision making for a landscape strategy or infrastructure scheme.

The successful delivery on a strategic level can also be affected by the way in which drawings and pictorial forms are perceived during the project process. As explained in Chapter 5, visuals are often identified as ‘threatening’ to the scheme, hence they are often seen or used as afterthoughts, luxury factors or the ‘extra mile’, impacting on the communication of significant concepts and therefore the project’s effective implementation. The suggestion made by this research is that drawings are important, but they are also fragile and therefore they need the continuous support of policies.

On large scale and regional schemes, generalized drawings (also known as ‘abstract drawings’) convey the message without pointing out any specific details on the land itself, and thus avoid generating a perception of threat. In both large and small scale developments, pictorial forms can create a landscape vision, and express and illustrate ideas, providing a better communication of the narrative in cases where they are considered in the early stages of the process.

Drawings can influence decision making by enhancing communication and interpretation of significant concepts, but delivery of a scheme is also benefited by the way in which these concepts interact with each other. Examples have shown that where sustainability and spatial quality are perceived as intertwined concepts and there were strong communication and participation processes, the implementation of the landscape strategy had better results.

7.4 Key ideas and politics

The concepts, including low carbon and spatial quality, are often considered as political discourses, but what is important on a large scale is that successful examples enhance the idea of sustainability and sense of place, being able to deliver schemes that can provide help to face global needs and challenges. During the research it emerged that drawings are far more political than was initially considered. Therefore, procurement processes, legal schemes and policies are proposed as tools to enhance the use of visuals as communication elements on strategic scales and reinforce what is meant by quality.

7.5 Potential impact of the research

This research has laid the foundations that could lead to significant changes in the way that the landscape strategic project is perceived in current practice. It is a real-time investigation that has the potential to change how regions are conceptualised, alter the way of thinking in major infrastructure projects and create more sustainable, resilient environments. By improving the processes and implementation strategies followed, the thesis can change professional attitudes and therefore the way in which future and existing projects are being conceptualised and delivered. The establishment of a project

framework where the ambition is to identify successful elements, developing resilient and quality landscapes, will impact on professional perceptions, with significant potential for this also to affect current political values.

Concepts such as climate change, environment, low carbon and landscape future-proofing have recently been put on the European government agenda of major developments, however this research has demonstrated that is inconceivable to plan any landscape scheme effectively without considering these. This will have a significant impact on the way in which the landscape is perceived and major projects are pursued, but most importantly it will affect the way in which climate issues and global challenges are being addressed on a strategic scale. By introducing the findings of this research to professional practice (e.g. CPDs, talks and workshops), there is a great potential to strengthen the processes and procedures followed, creating opportunities where the landscape idea can be embraced, providing a social, cultural and environmental identity. The prospect for this new way of thinking to influence the development of professional attitudes can also potentially impact on political views and future legislation.

The outcomes of this study in relation to the role of drawings and visuals in landscape strategies can change the way in which this process operates. The effectiveness of pictorial forms that has been revealed can strengthen the need to establish them at the beginning and throughout the project framework, change the way in which professional practice and institutions are dealing with decision making, and as a result the way that landscape visions evolve. The suggestion that ‘generalised’ drawings are more effective on large-scale developments will give a new perspective on the way in which these projects are dealt with, and their early integration might ease the perception of a threat, giving a different direction to the project administration. All the above will certainly

have an impact on education and the way in which design, low carbon and spatial quality are being addressed and taught in relation to regional landscape strategies.

7.6 Future directions

The pioneer examples evaluated by this thesis confirm that is necessary for the landscape project process to evolve considering the concepts of low carbon, spatial quality and drawings, however there is a real need to investigate how this can be achieved. It would be very valuable for future research to examine ways in which the proposed project framework can be established and how this can be integrated to the current political situation and policy structure. Next steps should address ways in which the framework can meet the best possible outcomes in the landscape schemes and examine how it will work in practice. Future research can also explore more practical examples where drawings, low carbon and spatial quality have an impact on delivery, extracting future trends and methods.

Even though drawings and design have been well researched the findings of this thesis show potential for future research in this field. An in-depth exploration on generalised drawings to identify the reasons why they are perceived as less threatening and more effective in regional strategies could have an impact on their political dimension. In addition, future research on the way in which drawings impact on the interpretation of key ideas, and the way in which these are spatially represented will help to develop examples of visual representation of low carbon elements depending on the characteristics of the area.

Public participation often reveals significant values within the landscape that may not be known to the designers or the project developers, and therefore their involvement in the process is important for the landscape scheme. A suggestion for future research will

be to explore the nature, extent and effectiveness of public engagement through participation processes in regional landscape strategies. The suggestion to investigate the optimum way of public engagement, if any, and also at what stage of the design process should such participation processes be embedded, will have an impact on the development of the project framework.

An academic interest in how strategic landscape design can better be taught in order to address the current climate and global challenges is believed to be very important for the mind-set that future professionals will develop. A collaboration between academia, research and practice will lead to a sustainable way of project development where future landscape architects will be given the opportunity to consider all the evolving concepts from the very beginning, making them part of the initial conceptual process of landscape design.

7.7 Recommendations

Based on the potential impact of this research and the future steps that are discussed above, the thesis has produced the following recommendations.

- Further research into the establishment and integration of a different ‘project framework’ presented above with an emphasis on how this can be structured.
- Work closely with the landscape profession to see how this research can be embedded as an integral part of the professional curriculum.
- Work closely with academics to see how that curriculum can be delivered, establishing a common language between practice and academia.
- Further research through drawings to examine how visuals used in participation processes can improve communication between the different parties.

- Identify ways where this research can engage the higher level political decision makers to increase their awareness of global challenges and the importance of the landscape-scale design

7.8 The researcher's development

During this journey of research and practice, I have been introduced to a series of fascinating processes and explored several memorable experiences. Coming into this thesis with a science education and being exposed to different research traditions including working with people, ideas and policy, has changed the way I think about research and how I deal with the landscape profession. This process has played a major role in my personal development both as a researcher and a professional, creating a new mentality and training me to combine an artistic with a scientific way of processing and evaluating ideas.

The continuous engagement with live projects has improved my understanding and management skills of large-scale landscape schemes, making me more knowledgeable on a theoretical level and boosting my confidence on how to unpack design ideas depending on the area, the culture, the country, the landscape vision and the stakeholders involved. Through this study, I have improved and established my research and academic skills, by identifying problems, analysing data and developing theories, and have also grown as a professional landscape architect, being able to think on a broader scale and take upon holistic challenges such as the concepts of climate change, low carbon and landscape design.

I consider this experience to be a significant advantage for my future career since the concepts of sustainability and low carbon are developing quickly, demonstrating the great potential for this thesis. The opportunity to visit and participate on various projects

around Europe has improved my ability to overcome possible problems and adapt to different circumstances in a quick and effective way. The unique experience to engage, throughout the duration of a research degree, with professional institutions and be a member of a strong business network through the Climate-KIC sponsorship has increased the possibilities for transferring this concept to European and international locations, meeting the goals of the research and becoming an ideal professional opportunity.

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Appendix

1. Exhibition boards from pilot study
2. La Cerdanya participation process leaflet
3. Room for the river corporate clip (video in English language) (see attached DVD)
<https://www.youtube.com/watch?v=cCAHgSMauYE>
4. New Dutch Waterline, landscape preservation and process of the UNESCO nomination (video in Dutch language) (see attached DVD)
https://www.youtube.com/watch?v=fF_nES_LRHA
5. New Dutch Waterline, animation of historical importance of the waterline (video in Dutch language) (see attached DVD)
<https://www.youtube.com/watch?v=fmypPoj5kjM>
6. Room for the River city of Nijmegen (production commissioned by the city of Nijmegen) (video in English language) (see attached DVD)
<https://www.youtube.com/watch?v=wYM1e2ANUFU>
7. HS2 Design vision document
8. HS2 Design panel remit document
9. Official Report, Noodwaard (Room for the River) landscape changes
10. Official infographic Nijmegen (Room for the River) demonstrating dyke relocation method
11. Official infographic Noordwaard (Room for the River) demonstrating dyke depolderisation method
12. Official timeline and construction progress for Nijmegen (Room for the River)
13. Context Appraiser – Omgevingswijzer
14. Landscapes Principles Lluçanès
15. HS2 Landscape Vision (see attached DVD) <https://vimeo.com/53889346>
16. Questionnaires and Consent Form
17. Conferences and Publications

Appendix 1

Exhibition boards from pilot study

A landscape way of seeing ... low carbon

Anastasia Nikologianni
Professor Kathryn Moore and Professor Peter Larkham

'Landscape today is pre-eminently the domain either of scientific study and land planning or of personal and private pleasure. It no longer carries the burden of social or moral significance'

D. Cosgrove

The research

This drawing exhibition explores the expression of low carbon in regional schemes through an analysis of the Wolfson Garden City Prize competition finalists.

The exhibition presents the preliminary outcomes of a broader PhD research linked to landscape scale vision, which aims to put landscape and sustainable design at the core of spatial planning.

This study aims to investigate the extent to which low carbon and spatial quality can be delivered in regional projects and the way in which visual representations and pictorial forms such as drawings, diagrams and images contribute to the design process and change the way we view regions and their landscape potential. It is part of a broader strategy to examine how a more holistic approach to landscape may significantly contribute to the global challenges we face by re-establishing landscape at the forefront of development and as the context within which the development processes take place.

It intends to give a new dimension to the understanding of low carbon into the design process and exploit ways where pictorial forms can benefit the process, the final product of design and the dissemination of the ideas.

The exhibition examines the ideas through a study of the Wolfson Garden City Prize competition winners. Winning schemes have been analysed with the aim of unpacking information from the final masterplan and finding evidence that supports or otherwise, sustainable design in strategic schemes.

The study identifies a number of important strands that contribute in the concept of the Garden City, such as location, scale, connectivity, water, green and food production.

The competition

Arguing that 'the case for garden cities is overwhelming with the current housing situation in the UK creating hardship and inequality for millions of people'. The competition brief suggests that finding an innovative way to build communities that truly provide for and support their residents is not simple. The 2014 Wolfson Economics Prize therefore sought to develop an answer to the question of how to bring about a new garden city.

The Wolfson Economics Prize is the second largest prize after the Nobel and it has been awarded to the entrant who offered the best answer to the question :

"How would you deliver a new Garden City which is visionary, economically viable, and popular?"

The vision for entrants was to provide ideas for improving the quality of urban life through the architecture, civic design, public spaces, transport networks, and infrastructure of a new city. Entrants should inspire readers with the possibilities that a modern city could offer in terms of quality of life and cost of living.

Wolfson Prize 2014

Wolfson Economics Prize 2014

The main ideas of the three finalists of the 2014 Wolfson Prize Garden City Competition, 'Stoke Harbour' submitted by Shelter & PRP Architects, 'Uxcester' submitted by Urbed and 'Be A Pioneer' submitted by Barton Willmore LLP, presented in the following boards.

Selected quotes taken from publications and interviews illustrate key ideas of each submission. These are to be read in conjunction with the masterplans submitted and the analytical drawings created by the researcher.

"Delivering a new garden city is an enormously complex task, spanning finance, legal, design, governance economic and environmental issues. We are hugely impressed by the entrants' efforts to grapple with these issues and the competition is very hotly contested with a wide range of approaches." Trevor Osborn, Chairman of the Judges

Stoke Harbour



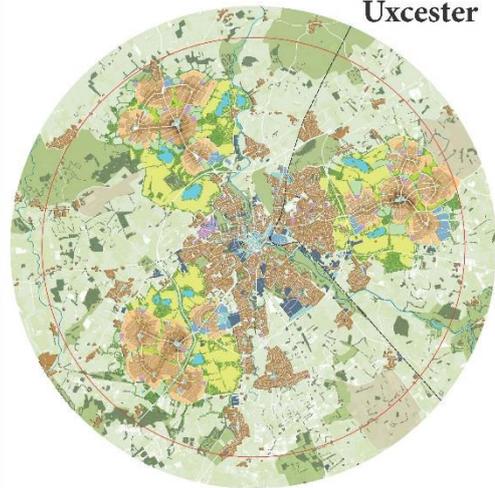
Stoke Harbour 3D masterplan provided by Shelter

The landscape approach at 'Stoke Harbour' is driven by the principle of integration with the existing topography, watercourses, agricultural patterns and movement networks. This acknowledges and works with the complexity of both man-made and natural systems. (Shelter)

"We wanted to make it sustainable in a way that will be attractive to the people who are going to live there and people who live in the local area [...]" (Shelter)

Based on the concept of 'trellis - vine and snowflake' Urbed argues that each of the component neighbourhoods of the Uxcester Garden City needs a trellis to give it a clear, legible structure as well as balance and beauty. This is the masterplan that gives shape to its streets and spaces.

Uxcester



Uxcester plan provided by Urbed

Be a Pioneer



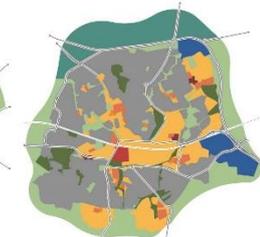
Land use Breakdown of 'Stand-Alone' Garden City concept



Land use Breakdown of 'Expansion' Garden City concept



Land use Breakdown of 'String of Pearls' Garden City concept



Land use Breakdown of 'Regeneration and Insertion' Garden City concept

According to Barton Willmore there can be no 'one size fits all' solution to delivering Garden Cities.

As a consequence of this, and in response to the intricate nature of the British landscape, Barton Willmore has developed several (not exhaustive) models of Garden City typology. The proposition for the competition is a 'framework approach' that intends to 'leave the room and the opportunity to the garden city to grow' instead of providing a defined masterplan. The model is therefore developed not on a single spatial solution but on several typologies that can be adapted to individual sites and local circumstances.

"... Whatever is built has to be inspirational, has to inspire people to want to build it. I would like to live there...." Lord Wolfson, Wolfson Economics Prize 2014 Launch Event

LOCATION & SCALE

Where are the best places to locate new cities?

Are there any specific sustainable locations?

The decision regarding where we put new settlements is always important and politically challenging. Older settlements tend to be built on higher ground, in prime locations to access or where they can be easily defeated.

How important is location and scale? How does scale affect, infrastructure, social and cultural development?

Stoke Harbour

The 'Stoke Harbour' proposal is located at Hoo Peninsula, Medway, Kent and proposes a total of 15,000 homes the first 15 years with the possibility of future extensions.



Extensions plan provided by Shelter. Future extensions of Hoo Peninsula as proposed by the designers.

'[...] we wanted to understand where in the country a new Garden City could be built that met existing housing needs, so from Shelter's point of view is very important that we are addressing the housing shortage, which is a really big concern for us [...].

'[...] There is a power station here, which was useful for us and an employment zone, so they were important as location factors. And then we also established that most of this area (Stoke Harbour) is owned by one landowner, so that was again a massive help.' (PRP)

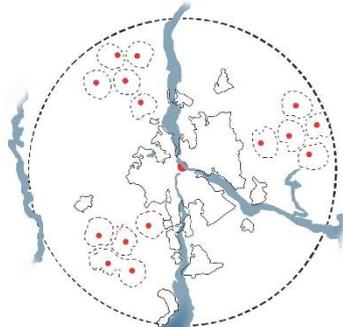


Neighbourhood Strategy of Stoke Harbour. Neighbourhoods are separated by above 800m.

'[...] The reason we chose this site is partly because it's closer to London – so easily connected into a major job creation economy, lots of demand, but also that currently has low land values. That was very important for our model, our economic model as most of the places that are close to London and well connected to London have very high land values for obvious reasons. So it ticks a lot of boxes for us as a site.' (Shelter)

Uxcester

'Uxcester' is a fictional place that was used by Urbed to support the competition's proposition. Urbed identified forty cities similar to Uxcester where the scheme could apply, however they admitted that by using a fictional place they avoided some of the complexities, both political and practical that a real place would face. The size for each extension is around 20-25,000 homes.



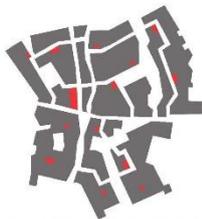
Neighbourhood Strategy of Uxcester. Nearby neighbourhoods have a distance of 800m between them.



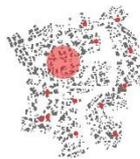
'[...] you can just about combine heat and power plans for house size, but it is very inefficient, car use, waste use, all those things, basically are much more efficient if you do it over a thousand homes rather than per single home. So, if you start organizing these things at the neighbourhood level then you are able to deal with water, energy, transport and so on in a much more efficient way, much more sustainable way than you do if you do it in an individual house basis.' (Urbed)

Be A Pioneer

'Be A Pioneer' by Barton Willmore proposes a garden city 'wave' in 40 locations. The submission included four typologies of garden city models that are real places but their identity is not revealed by the designers. The 'Stand-Alone', 'Expansion' and 'String of Pearls' models are based on the premise of 40-50,000 homes. For the 'Regeneration & Insertion' model the proposition is 25,000 homes at the first stage as the specific location (Bracknell) doesn't allow further development.



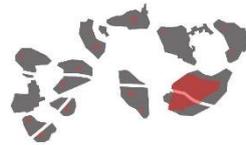
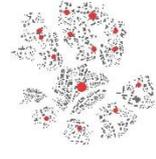
Stand - Alone Model. Neighbourhoods are separated by above 400-800m.



'One of the mistakes that ecotowns made was that they far too quickly reveal the location, without having done any meaningful engagement with the citizens who lived there. As a consequence there were not able to identify the people who might support it. The young families who wanted a housing growing strategy. The people that say, 'I quite happily, change my lifestyle, in support of a more sustainable life, where I can live closer to where I work' [...].' (Barton Willmore)



Expansion Model. Neighbourhoods are separated by above 400-800m between.



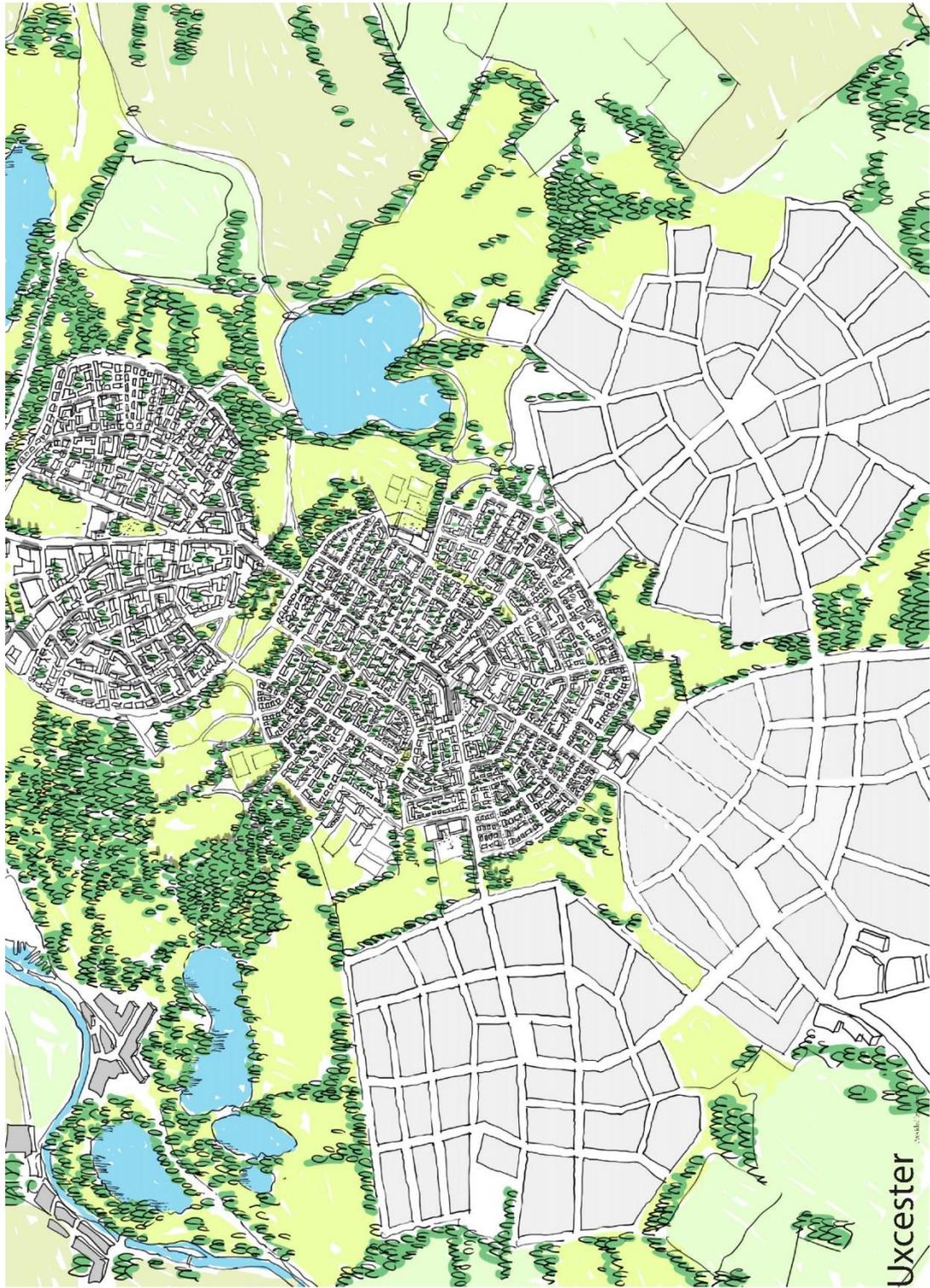
String of Pearls Model. Neighbourhoods are separated by above 400-800m.

'[...] we came across the idea of a series of linked villages – a kind of polycentric model – still working within the landscape and which had lowest areas of constraints, but still link by a kind of a central loop and then link primarily to rail and we call that 'new market town model' or 'String of Pearls'.' (Barton Willmore)



Regeneration and Insertion Model. Smaller scale of settlement.





Water; a fundamental of life. Is it a fundamental of regional design?

Water supply and management, sustainable drainage systems (SUDS) and water policies are key features in the water industry's carbon footprint agenda. As technologies are increasingly developing the goal is to limit water use as much as possible. An alternative way is to introduce it to the low carbon concept.

Image, sound, colour ... Water can be a defining feature in the design of future cities.

Would be possible to place it at the core of future settlements to improve the quality of life?

Stoke Harbour

'[...] this place is ...right over there, in the middle of nowhere. How do you get people to go there? It has to be a destination. It has to have something special. That was why we also decided to put a harbour in there, so you could create waterfront, so you could create a real destination and value. And that's part of the masterplanning process. To make something of the site you've got [...]' (PRP)



Stoke Harbour masterplan provided by Shelter

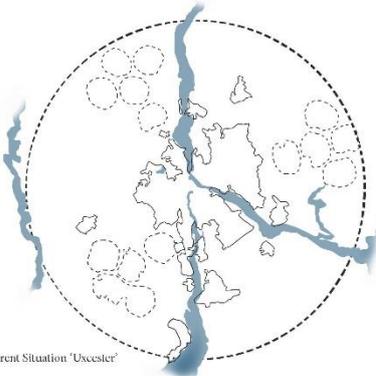


Water is a defining feature for the Stoke Harbour proposition

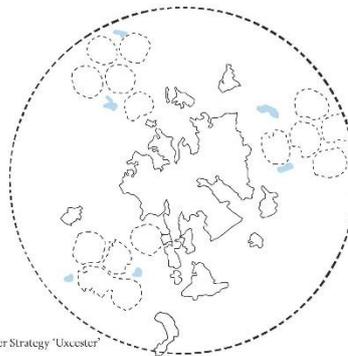
'[...] Obviously flooding is one of the main risks to the UK for climate change. And so we had to reassure people that the design of the town would be resilient to flooding [...]' (Shelter)

'[...] Things like climate adaptation and addressing climate change, of course are in the masterplan. So for instance, just looking the contours and the risk of flood and water management. The contours of the site dictate where you're going to have your wetland parks that absorb your lakes, your water strategy and your flood defence.' (PRP)

Uxcester



Current Situation 'Uxcester'



Water Strategy 'Uxcester'

'[...] part of this scheme, part of that playing field is in a flood plain, which you could either spend a lot of money to deal with or just decide not to build on that. On the essay we didn't want a headline saying we can only achieve double in the size of Uxcester by building on a flood plain. We didn't want to go there.' (Urbed)

Be A Pioneer

'[...] it's part of the research. When we did a scan of opportunity places, we mapped a lot of high level environmental constraints, natural parks, and flood plains were on this as well.'



Water is only presented in the 'Stand-Alone' model of all four typologies

'So historically most places settled around rivers these days is quite difficult to develop around these places, because of legislation and so we were sort of starting to move away from this, because it will put us in quite a difficult box to deliver'. (Barton Willmore)

CONNECTIVITY

Woollet argues that landscape connectivity relates to the strategic transport system, and needs to be linked to five goals: maximise the competitiveness and productivity of the economy, to address climate change by cutting emissions of carbon dioxide and other greenhouse gases, to protect people's safety, security and health, to improve quality of life and to promote greater equality of opportunity¹.

All finalists argue that a low carbon approach involves far more than minimizing carbon emissions through high level technologies.

Stoke Harbor proposes a network of green and blue corridors to enhance mobility to shape experience and offer an important vision to connect people to the locality.

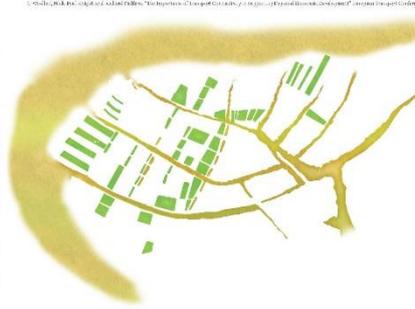
The design of our cities, roads, open spaces can make a difference as to how people commute through the space. How do we design 'low carbon connectivity'?

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Stoke Harbour



Water Strategy shows the harbour district, swales, raingardens and blue corridors proposed by the scheme



Green Strategy proposes alternative routes of connectivity through the city



Main Transport Strategy considers alternative routes through the city

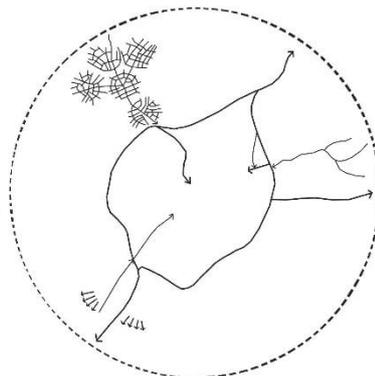
'[...] we mapped transport links as well, because it's really important from our perspective that cities are linked in to functional economies [...]'. (Shelter)

'[...] we were looking at this existing railway that runs down the peninsula, it's a single track railway, that is currently connecting the power stations and the harbours here, container harbour. So, it's an industrial single track railway. And that was for us the key to this whole development, that you had connectivity you had a rail-link and that would make it a viable place, for people to live [...]'. (FRP)

Uxcester

'[...] travel distances are a huge sustainable issue [...]'. (Urbed)

'[...] you can't use parking as a restraint. Some of these estates are just full of cars everywhere. So you can't do it by restraint, you have to do it by making the alternative more attractive than the car.'. (Urbed)

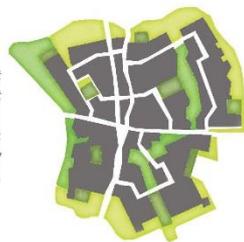


Main Transport Strategy from the extensions towards the city of Uxcester

'[...] we talked about a tram system serving them. So people living in the new garden city have access to all the facilities and jobs that you have in existing place in a way which is sustainable [...]'. (Urbed)

Be A Pioneer

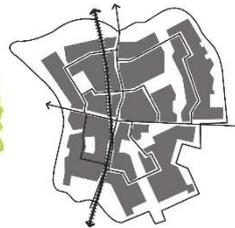
'[...] So we tried to identify towns that had that same infrastructure and economic base that 'Stand Alone' did in terms of the railway station, the infrastructure network of transportation particularly and employment also. And identify where those areas might expand [...]'. (Barton Willmore)



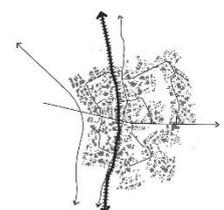
Green Strategy 'Stand Alone' Model, Land - Use



Green corridors 'Stand Alone' Model, Growth Year 25



Transport Strategy 'Expansion' Model, Land - Use

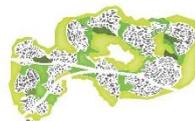


Transport shown at the 25th year of grown for 'Expansion' Model

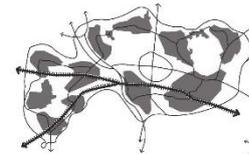
'[...] we came across the idea of a series of linked villages - a kind of polycentric model - still working within the landscape and way had lowest areas of constraints, but still link by a kind of a central loop and then link primarily to rail and we call that 'new market town model' [...]'. (Barton Willmore)



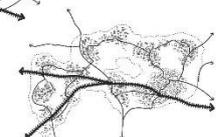
Green Strategy 'String of Pearls' Model, Land - Use



Green corridors 'String of Pearls' Model, Growth Year 25



Transport Strategy 'String of Pearls' Model, Land - Use



Transport shown at the 25th year of grown for 'String of Pearls'

MAKE 'GREEN SPACE' HIGH QUALITY & EVERYDAY

Is it 'green space' if you use it every day?

A key aspect of sustainable design is the desire to engage citizens with high quality networks of pedestrian and cycle routes, parks, gardens with easy access to the broader landscape, make 'green space' permeable, 'every day' and attractive. A part of cultural identity.

An attractive landscape improves spatial quality of place and creates landscape experiences such as walking and cycling routes for people to commute every day. By designing space for people to use every day, we put landscape at the core of the city, aiming to make it a meeting place of culture and environment. Memories, feelings, past and present meanings can be the result of daily contact with green space.

Stoke Harbour



Green Strategy of Stoke Harbour shows the parks, linear parks, orchards, allotments and tree avenue

'[...] I think one of the things about the design that I quite like it's the linear parks. Cause it just means that people can use that space day to day rather than just the weekend. It's not just a park you go to the weekend, you commute via it, you go to the shops via it. So it's just creates a kind of a greener environment which feels natural rather than imposed, I guess [...]' (Shelter)



The proposition for Stoke Harbour is 40% of green space compared to urban infrastructure.

'[...] people said 'actually what we liked about it, was the fact that it's quite soft. And it sat quite gently in the countryside'. So we had to try retain that. Cause they felt it was comfortable for people. And of course we tried to do it with the masterplan, it does thin out like the edges of a cloth' (PRP)

'[...]sometimes it will open up to be more of a green space. So, the routes will open up and you've got the parks, linear parks' (PRP)

'[...] we have said that the fringe around the city will be protected land[...]. It was just to signal to people that this isn't going to be urban sprawl.' (Shelter)

'[...]I think the phrase we use is 'bringing the countryside into the town' that just means that is very easy to get into the green space, wherever you are [...]' (Shelter)

'Integration with the landscape and the topography is definitely an aspect in the design that we wanted to make sure, that it feels very fluid around the border of the settlement, absolutely [...]' (Shelter)

Uxcester



Green Strategy of 'Uxcester' as it is shown for one of the neighbourhoods that belongs to the extensions.

'[...]You have some more of parkland in here and each of these extensions should have these public parks which could be used for all sorts of things, but they become the green resource.' (Urbed)



The proposition for 'Uxcester' is one hectare of green space for every hectare of built infrastructure.

'[...]there is a problem about open space, which is people think that open space is a good thing. And the more open space you have, the better it is. And if you go down that route, you end up with very low density cities and with lots of green space, which feels very unsafe and you can't support public transport and things start to become difficult.' (Urbed)



Stoke Harbour final masterplan

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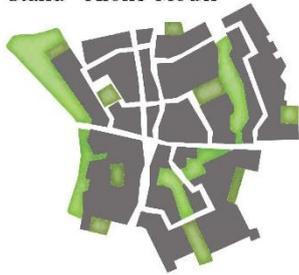
MAKE 'GREEN SPACE' HIGH QUALITY & EVERYDAY

Be A Pioneer

A network of parks, major parks and open spaces is presented at the four different typologies of the submission

'[...]resident managed green space – green beach huts (park-huts) for weekend recreation, and relaxation in a public green, managed by community associations whilst reducing the cost of parkland maintenance[...]' (Barton Willmore)

'Stand - Alone' Model



Country and major parks at the land use diagram



Country and major parks as proposed at the 25th year of growth



Green space percentage compared to the built infrastructure presented at the land use diagram



Green space percentage compared to the built infrastructure presented at the 25th year of growth

'Expansion' Model



Country and major parks at the land use diagram



Country and major parks as proposed at the 25th year of growth



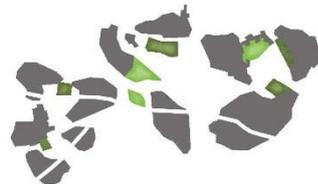
Green space percentage compared to the built infrastructure presented at the land use diagram



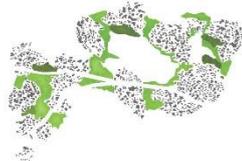
Green space percentage compared to the built infrastructure presented at the 25th year of growth

'[...]we've talked about a productive edge, which sometimes is coming to the core, there is the notion, kind of, 'interface with the landscape hinterland' – we always like to introduce the notion of 'central park feature', and also feel that is important to go for 'neighbourhood level parks as well', and of course all of that is overlaid with landscape requirements that come from schools, colleges as well [...]' (Barton Willmore)

'String of Pearls' Model



Country and major parks at the land use diagram



Country and major parks as proposed at the 25th year of growth

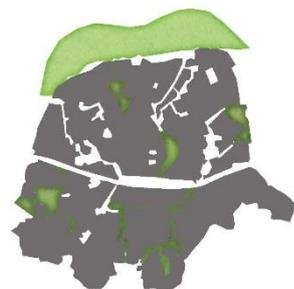


Green space percentage compared to the built infrastructure presented at the land use diagram



Green space percentage compared to the built infrastructure presented at the 25th year of growth

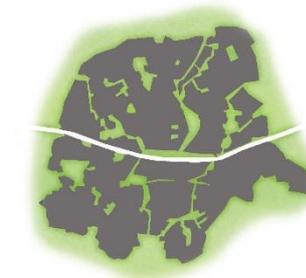
'Regeneration & Insertion' Model



Country and major parks at the land use diagram



Country and major parks as proposed at the 25th year of growth



Green space percentage compared to the built infrastructure presented at the land use diagram



Green space percentage compared to the built infrastructure presented at the 25th year of growth

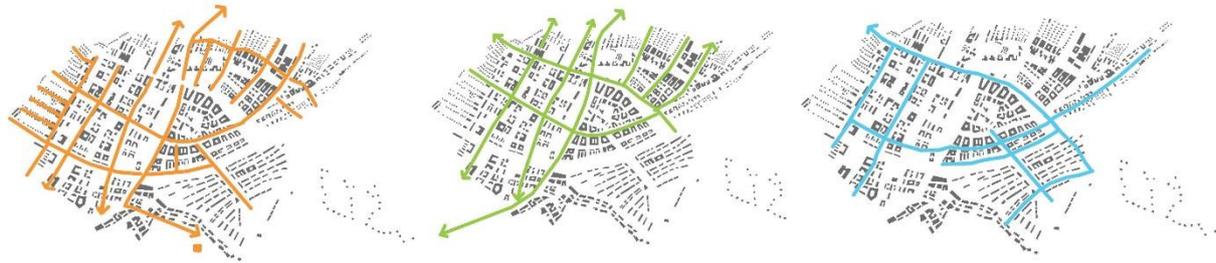
LAYERING THE LANDSCAPE

Creating a rich landscape.

What if instead of addressing individual challenges such as energy, engineering, planting, we start thinking in a layered way? Landscape is not only blue, green and grey. It is the community, the socialization, economics, activities, memories and experiences... Can we achieve by creating a holistic approach by layering the landscape?

Stoke Harbour

[...] the proposal here was to share all the spaces. They are in the same grid you see, so you're layering on the same grid[...]. (PRP)



Energy Grid

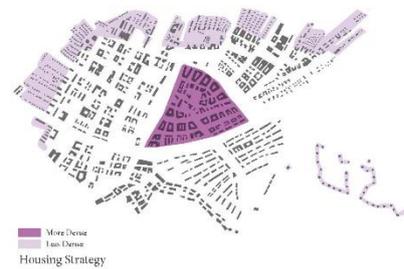
Green Grid

Blue Grid

'[...] the idea of having an energy cooperative across the town. So the idea was that it could reduce peoples energy bills, both through a producer cooperative (to produce energy), but also a consumer cooperative, so everyone pulls together their energy bill or their energy purchasing power and they can negotiate a lower price as a result.' (Shelter)

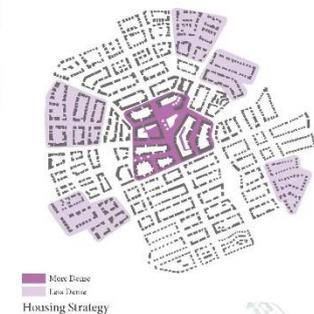
'[...] You want to make it easy for them, not to get in the car, but get where they want to go easily by foot or bike or walking. So the routes should be pleasant, they should be quick and direct and safe and close. Which means compact cities.' (PRP)

'I don't think anyone can afford, or very few people can afford, to have that semi-detached house and garden moving forward, both environmentally and financially in this country. So, a much more compact city is what we were aiming for [...].' (PRP)



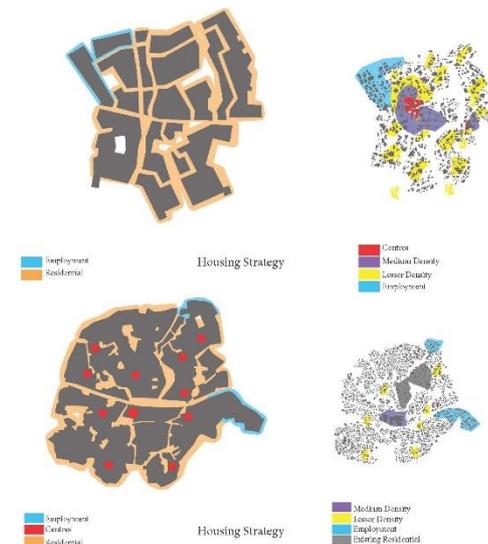
Uxcester

'[...]The amount of energy to deliver your 'Guardian' if you're living in some far land in the middle of countryside is huge. So, there is no point solving the issue for the house and forgetting about how you're living in the world. Unless you are going to be self-sustained working from home, growing your own vegetables, actually as soon as you are going for a job somewhere, you go shopping somewhere else, you have your shopping, newspaper delivered whatever, actually to live sustainably, you need to live within a city' (Urbed)



Uxcester plan provided by Urbed

Be A Pioneer



'[...] in the urban areas, you could probably get denser system development. And if you got denser development then it's much more easy to get things, like district heating to work because you've got bigger density of users and uses as well.' (Barton Willmore)

'[...]we actually went to British Gas and I said 'I want to know if you are going to design a new settlement and you're going to provide all energy to that, how on day one can you ensure that we'll have sustainable energy, but in an economically viable mechanism in year 25 you'll be able to expand that system' and I have to say that not many people can answer me those questions, about the kind of adaptability of systems and processes.' (Barton Willmore)

'[...] The perception of development in the UK 'new development tends to be the vision of a housing estate'. Homogenous, monoculture, lack of diversity all delivered at once. No richness to that and no integration with systems where that's water or sewage or energy at all. Because there is no concept that the place needs to provide for itself.' (Barton Willmore)

FOOD PRODUCTION

Is locally grown food possible in future cities?

High on the agenda is the vision of local production and food security. The UK is aiming to achieve a 70% reduction in Greenhouse Gas emissions (GHG) by 2050². Moving to a more energy efficient, low carbon economy will help us towards this direction. How is landscape affected by those changes?

Carolyn Steels suggests to reconsider, how we might use food to rethink cities in the future - to design them and their hinterlands better, and live in them better too.³

² Making the Transition, 2009, p. 10. ³ Carolyn Steels, 'Designing a Food City', in 'The Future of Food', 2010, p. 10.

Stoke Harbour

Orchards and allotments have been allocated at this plan. These activities are placed at the edge of the settlement, where the density is lower. The productive landscape is integrated with the green fringe around the city.

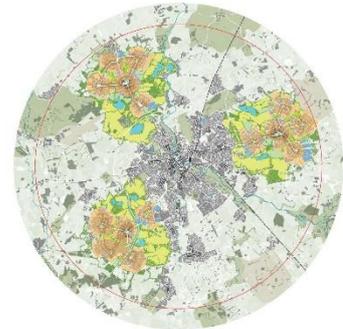


Allotments and Orchards proposed for Stoke Harbour

Uxcester



We couldn't identify any productive landscape strategy in the extensions. Can you suggest a location?



Be A Pioneer



Land Use



Growth 25 years

Productive Landscape 'Stand-Alone' Model

'[...]The idea here was 'could you get people using the landscape much more intensively, for food production? Could you increase the densities of the urban centres, by giving people access to the countryside where they have a bit of a foothold, they have a little hub where they can sleep, there is probably community water supplies, they then take on board, the stewardship role of that, there are central market facilities [...]' (Barton Willmore)



Land Use



Growth 25 years

Productive Landscape 'Expansion' Model



Land Use



Growth 25 years

Productive Landscape 'String of Pearls' Model

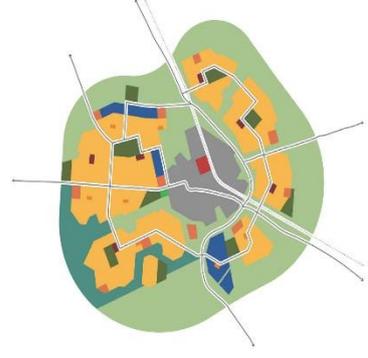
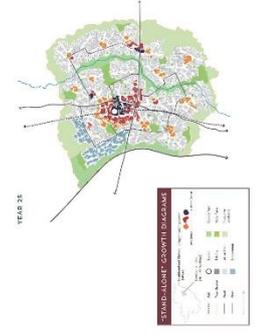
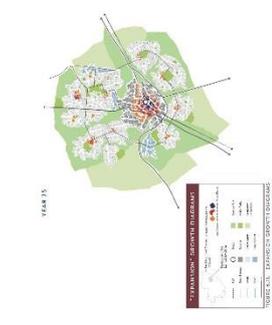


Land Use



Growth 25 years

Productive Landscape 'Regeneration & Insertions' Model



'Stand - Alone' Model

'Expansion' Model

'String of Pearls' Model

'Regeneration & Insertion' Model

Be A Pioneer four typologies

Developed by Barun Willmore

CONCLUSION

The concepts of low carbon and sustainability have dramatically increased in significance in recent times, influenced by the impetus to reduce greenhouse gas emissions (GHG), to deal with climate adaptation and address other global challenges such as food security, the depletion of natural resources, natural and man made disasters and the migration of populations.

New technologies dealing with these global challenges are usually dealt with at a micro scale. What seems to be missing is any understanding as to how these issues might be addressed at a regional scale. We seem to have lost a landscape scale of seeing.

This exhibition begins to address this gap in our understanding. The work of the finalists has been analysed to see how evident the response is to these challenges in a competition to create a new garden city – a truly iconic (and ambiguous) sustainable concept. Seeking to evaluate to what extent it is possible to move beyond detailed technology, it shows how some of the most creative practices in the UK imagine if, how and to what extent it is possible to develop broader strategies that have a far greater landscape sensibility and the nature in which it is possible to articulate the role this sensibility can play in regional design.

Underpinning this work is also the questions as to whether we have to remain loyal to traditional models of sustainability, based on micro technology, or might it be possible to use a more holistic, larger and integrated landscape strategy as a way to achieve sustainability.

We would appreciate to have your responses and your views about low carbon landscape.
If you are willing, please fill the questionnaire provided.

Appendix 2

La Cerdanya participation process leaflet

Appendix 7

HS2 Design vision document
pp. 2, 4, 6, 12, 13, 14, 24, 25

This is HS2 – a project that will set designers, from the widest range of disciplines, the challenge of reaching new heights of creativity and innovation in everything they design.

The last big rail journey started in the crucible of the Industrial Revolution. Our Victorian predecessors had the vision and ambition to connect our cities by rail, moving coal and supplies around the country in a capital-intensive economy.

HS2 is the next big journey for Britain – and it will increasingly be about the movement of people and ideas in a knowledge-intensive economy.

Within this context, designers must work expertly and collaboratively to realise the full potential of HS2.

The HS2 Design Vision explains how we will make this happen.



People

Design for everyone to benefit and enjoy

- 1 Design for the needs of our diverse audiences
- 2 Engage with communities over the life of the project
- 3 Inspire excellence through creative talent



Place

Design for a sense of place

- 4 Design places and spaces that support quality of life
- 5 Celebrate the local within a coherent national narrative
- 6 Demonstrate commitment to the natural world



Time

Design to stand the test of time

- 7 Design to adapt for future generations
- 8 Place a premium on the personal time of customers
- 9 Make the most of the time to design

What design success looks like

- Everything we make works intuitively and well for all our audiences
- And contributes to one seamless and enjoyable experience
- We deliver above and beyond the design brief
- Bringing benefits of many kinds to UK citizens

- All the elements are fit for purpose and sensitive to their context
- National pride in the system is matched by a sense of local ownership
- Small elements and big schemes meet rigorous environmental standards
- And, collectively, add to our cultural and natural heritage

- Every requirement for a high-speed rail system is met
- And we have designed in the needs of the future too
- We have joined up the nation with a system to last and evolve
- And created a national project to be proud of for many years to come

HS2 will expand our choice of where to live, work and visit by connecting our cities with ease and speed.

To do this we are creating many new places and spaces, such as stations, terminals and train environments, as well as restoring and growing natural environments. This principle requires that we consider regeneration, identity and environment.

We will know we are successful in designing for place when:

- HS2 design supports wider regeneration and connectivity to improve quality of life
- Local projects reflect their context but contribute to HS2's overall identity
- All schemes, large and small, meet rigorous environmental standards

Regeneration



4 Designing places and spaces that support quality of life

Each place and space, designed as part of HS2, is an opportunity to achieve the wider benefits that the UK government is seeking to achieve.

Each project is part of a bigger picture that is all about successfully regenerating areas and communities by creating great places to live, work and visit.

We are developing our Design Vision to guide decisions on related priorities, including:

→ Connectivity → Well-being → Public value

Identity

5 Celebrating the local within a coherent national narrative

Each place and space that is created as part of the system will contribute to HS2's own identity.

The design challenge will be to develop a coherent approach, establishing uniformity where it is essential while encouraging one-off expression based on local context where appropriate. HS2 seeks to enhance national and civic pride, while also supporting its own brand to support its operational and commercial objectives. It will therefore include many local design stories within one compelling national narrative.



We are developing our Design Vision to guide decisions on related priorities, including:

→ Visual language → Brand

→ Heritage

Environment

6 Demonstrating commitment to the natural world

HS2 has a positive environmental rationale – that high-speed rail is the most efficient way to transport people between cities. Building and maintaining the network will nevertheless create adverse environmental impacts. HS2 will use design to help deliver imaginative, appropriate and environmentally sensitive solutions.

We are developing our Design Vision to guide decisions on related priorities, including:

- Sustainability
- Wildlife



Acknowledgments

Contributors

The Design Vision developed from a meeting hosted by the Secretary of State on 3 July 2014, involving:

- Ralph Ardill - The Brand Experience Consultancy
- Dr. Philip Askew - London Legacy Development Corporation
- Alison Brooks - Alison Brooks Architects
- Chris Brown - igloo: Sustainable Property Investment Urban Regeneration
- Tony Burton - HS2
- Cynthia Charwick-Bland - Royal College of Art
- Sir David Chipperfield - David Chipperfield Architects
- Theresa Clarke - HS2
- Caroline Cole - Colander Associates
- Dr. Nigel Dunnett - Dept of Landscape, University of Sheffield
- Jim Eyre - Wilkinson Eyre
- Joe Ferry - Mars
- Daniel Freytag - Freytag Anderson
- Jerome Frost - ARUP
- Daisy Froud - AOC
- Johanna Gibbons - J&L Gibbons LLP
- Julian Glover - Department for Transport
- Andrew Grant - Grant Associates
- Bill Grose - HS2
- Thomas Heatherwick - Heatherwick Studio
- Margaret Hickish - Design 4 Inclusion Ltd
- Sir David Higgins - HS2
- Richard Hill - HS2

- Michael Johnson – johnson banks
- David Kester – David Kester & Associates
- Laura Kidd – HS2
- Roger Madelin – Argent Group Plc
- Professor Andrew McNaughton – HS2
- Peter Miller – HS2
- Professor Jeremy Myerson – The Helen Hamlyn Centre
for Design, Royal College of Art
- Professor Kathryn Moore – Birmingham City University
- Sadie Morgan – de Rijke March Morgan Architects
- Alison Munro – HS2
- Cathy Newbery – Cathy Newbery Ltd
- Kevin Owens – Owen Owens Design
- Paul Priestman – Priestman Goode
- David Prout – Department for Transport
- Menaka Sahai – David Kester & Associates
- Jonathan Sands – Elmwood
- Simon Sankarayya – All of Us
- Les Sparks
- Deyan Sudjic – Design Museum
- Ben Terrett – Government Digital Service
- Sophie Thomas – Thomas Matthews and RSA
- Raymond Turner – Raymond Turner Associates
- Jane Wernick – Jane Wernick Associates
- Professor Chris Wise – Expedition Engineering

Appendix 8

HS2 Design Panel remit document



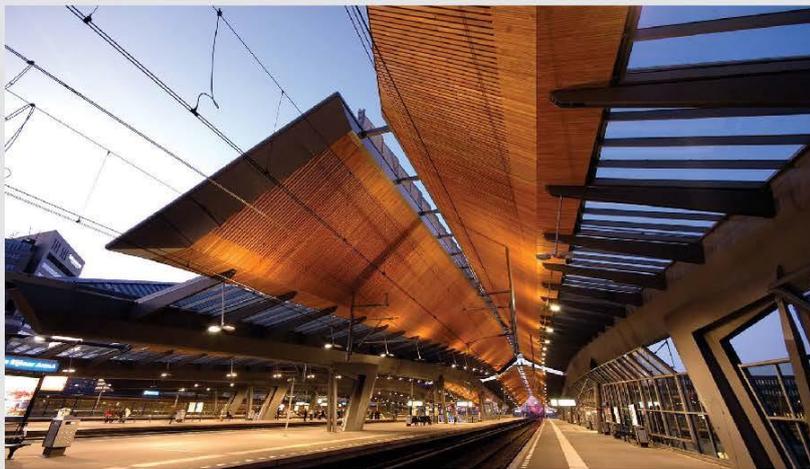
Design Panel

Remit & programme

HS2's Design Panel is set up with a mandate from government:

"Great design is essential to HS2. This vital railway is a key part of our long-term economic plan. We want HS2 to make the country proud and show the world what great British design can do." Secretary of State for Transport, Patrick McLoughlin

The Design Panel will provide independent advice and critique of the development of HS2 to help achieve its Design Vision.



Blijmer Station, Amsterdam by Grimshaw architects. One of the bank of inspirational images from the guidelines on stations reviewed by the interim Design Panel.

This paper is a summary output from the Design Process Workshop held on 27 May, and the Design Panel Programme Workshop on 29 June.

It provides a draft remit and description of the Design Panel covering:

Principles

Service offer

Scheme selection criteria

It includes a diagram providing an overview of how Design Panel's activities integrate with HS2's design programme.

This information may be usefully read with the Design Panel Terms of Reference.

Principles

The approach and advice of Design Panel members will be:

- 1. Impartial** informed by people who are unconnected with the scheme's promoters and decision makers, and it ensures that conflicts of interest do not arise
- 2. Expert** delivered by suitably trained people who are experienced in design, who know how to criticise constructively, and whose standing and expertise is widely acknowledged
- 3. Multidisciplinary** combines the different perspectives of design and other specialist experts to provide a complete, rounded assessment
- 4. Timely** conveyed as early as possible in the design process, to avoid wasted time, as it costs less to make changes at an early stage
- 5. Advisory** inform/influence the people who make decisions
- 6. Proportionate** for projects whose significance, either at local or national level, warrants the investment needed to provide the service
- 7. Objective** based on reasoned and objective criteria rather than the stylistic tastes of individual panel members
- 8. Accessible** clearly expressed in terms that design teams, decision makers and clients can all understand and make use of
- 9. Open** conveyed in confidence to HS2, and HS2 will share the advice with external stakeholders, partners or more widely in the public domain; while HS2 will be biased to openly sharing design panel advice, the design panel will also provide a safe environment for early stage design discussions to take place in confidence
- 10. Accountable** clearly seen to work for the benefit of the programme, with a view to enabling the project team to meet the principles set out in the draft HS2 Design Vision

Based on widely accepted industry best practice: "Design Review Principles and Practice", by Design Council Cobe, Landscape Institute, Royal Town Planning Institute and the Royal Institute of British Architects.

Service offer

The Design Panel advice and support will include:

- | | |
|---|---|
| 1. Design strategy and process | <ul style="list-style-type: none"> • pre-commissioning support on overarching HS2 strategies, visioning and brief definition • assessment of emerging strategies and policies |
| 2. Design enabling and mentoring | <ul style="list-style-type: none"> • early engagement with consultants for informal discussion on approach and methodology • on-going exploration to identify opportunities for innovation and (when necessary) to unblock problems |
| 3. Design Review | <ul style="list-style-type: none"> • independent assessment of design proposals by a multidisciplinary panel of experts, at key moments during design development |
| 4. Design Voice | <ul style="list-style-type: none"> • expression of independent and expert views on HS2 design to reconcile conflicting priorities • inspire HS2 staff, contractors, designers and engineers |

Scheme selection criteria

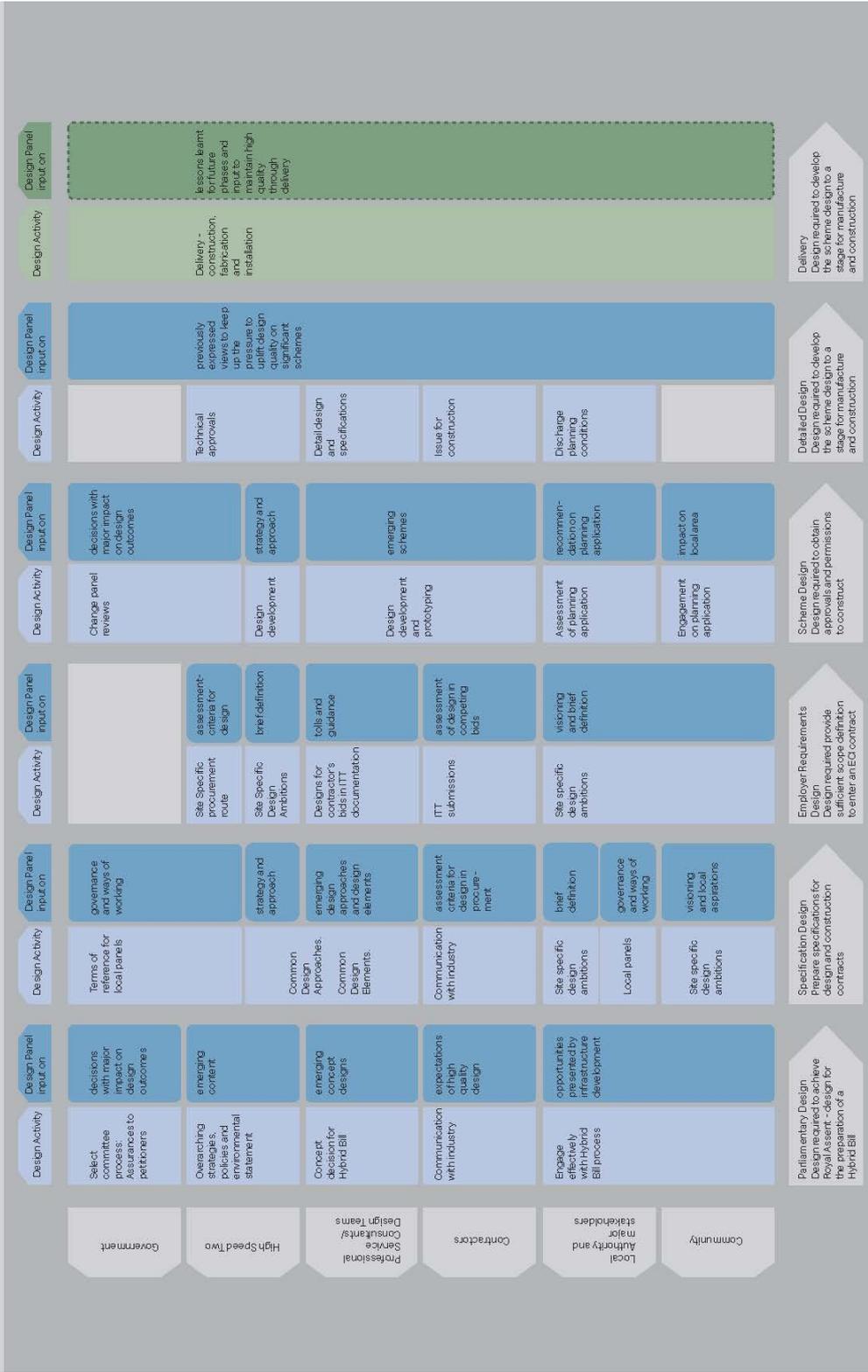
These selection criteria will be used to determine the suitability of an HS2 design projects for Design Panel input:

- | | |
|--------------------------|---|
| 1. Scale and Use | <ul style="list-style-type: none"> • large structures with great visual impact • public realm or landscape schemes over a large area • projects above agreed capex threshold • all stations |
| 2. Site | <ul style="list-style-type: none"> • schemes in the AONB • extraordinary impact on local surroundings • major impact on listed structures or sensitive landscapes |
| 3. Precedence | <ul style="list-style-type: none"> • long term usage, requiring flexibility over the life of the project • setting a precedent for HS2 or other projects • family of solutions, e.g. surface treatment and fences |
| 4. Public Benefit | <ul style="list-style-type: none"> • schemes particularly relevant to quality of everyday life • significant impact on passenger/people experience • de-risk the design development and application process • the project is conflicting with the design vision • input needed as an arbitrator on conflicting priorities • design panel involvement required to manage reputation and/or controversy |
| 5. Potential | <ul style="list-style-type: none"> • development of unique technique or product • presents a design opportunity • design panel chair deems project important |

Design Panel planning tool

This diagram is an indicative overview of the Design Panel's engagement across the design activities and stages of the HS2 programme. It is designed to be a tool to help scan for projects and support the long term planning of the Design Panel.

- Design activity in five development design stages
- Opportunities for Design Panel advice and support
- Design activity during delivery of HS2 (e.g. fabrication)
- Opportunities for Design Panel input during delivery



Appendix 9

Official Report, Noodwaard (Room for the River) landscape changes
pp. 17-25



4 Inflow Openings



17

Rijkswaterstaat



2 Outflow Openings



18

Rijkswaterstaat



Dyke Reductions



19

Rijkswaterstaat



High-walled Polders

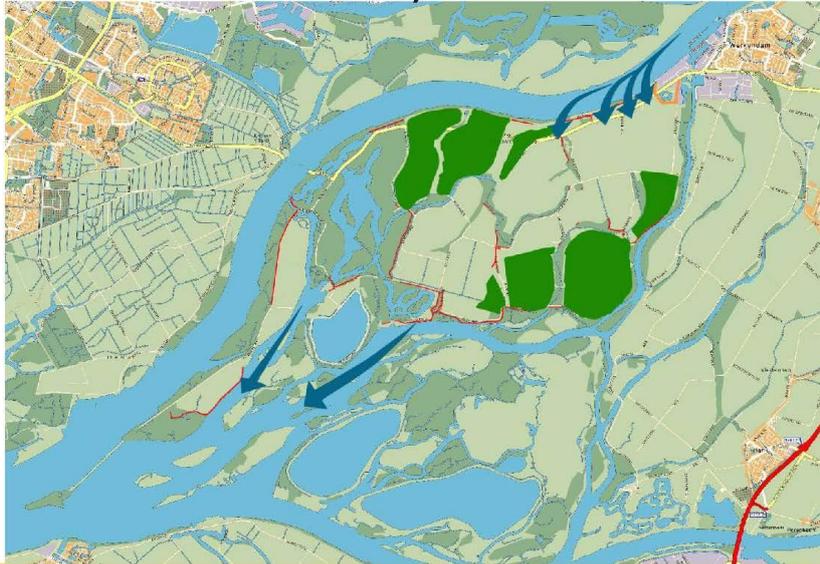


20

Rijkswaterstaat



Primary Barrier



21

Rijkswaterstaat



Existing Residential Areas

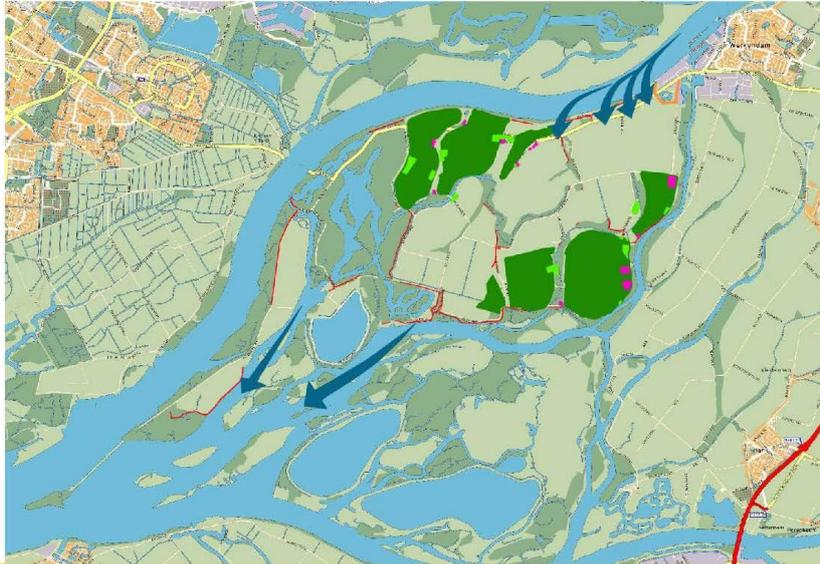


22

Rijkswaterstaat



New Residential Areas

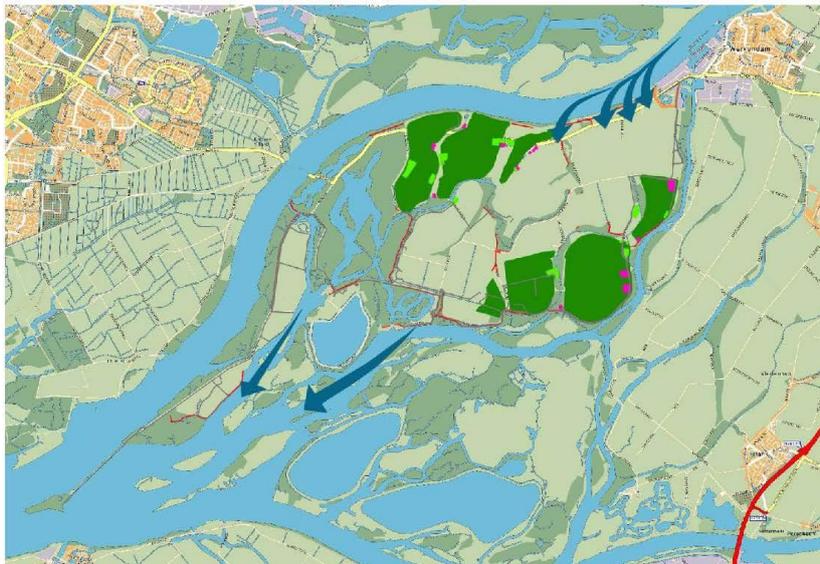


23

Rijkswaterstaat



Roads

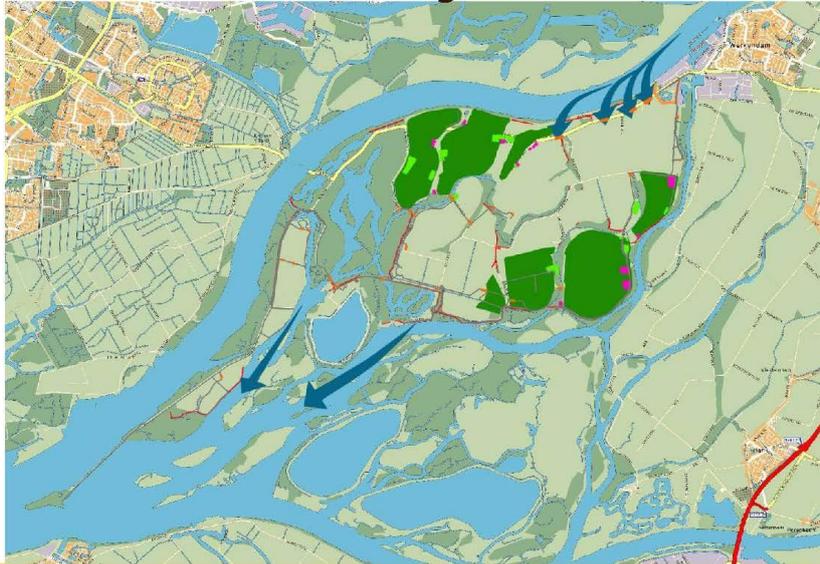


24

Rijkswaterstaat



Bridges



Appendix 10

Official infographic Nijmegen (Room for the River) demonstrating dyke relocation method

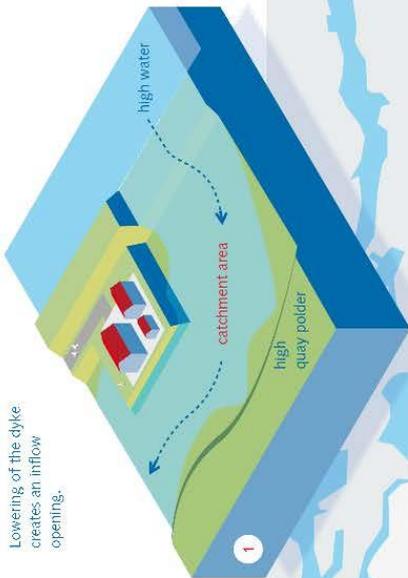
Appendix 11

Official infographic Nijmegen (Room for the River) demonstrating dyke depolderisation method

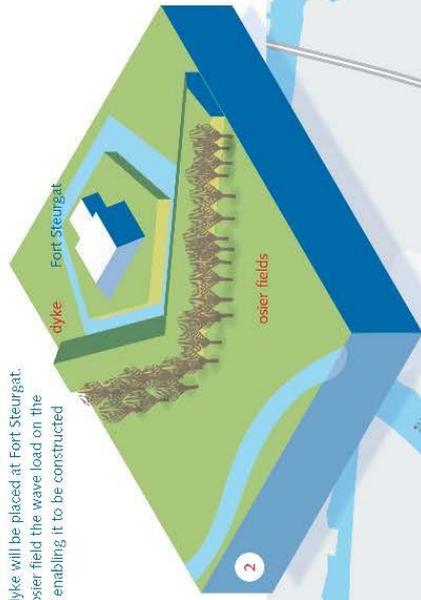
Depolderisation Noordwaard

The Noordwaard will be depolderised by partially excavating the dykes on the riverside and decreasing the dyke circle. This will allow the Nieuwe Merwede River to flow more rapidly out to sea during high water. In Gorinchem safety will be notably increased.

Lowering of the dyke creates an inflow opening.



An innovative dyke will be placed at Fort Steurgat. By creating an osier field the wave load on the dyke is reduced enabling it to be constructed lower.



DORDRECHT

After depolderisation, the catchment area is under water at least several times a year. Especially during the winter months. In the new situation, the buildings are on existing or newly constructed mounds.

The grounds outside the catchment area remain suitable for agriculture. Current residents and some of the farmers may continue to live and work on mounds.

The catchment area itself remains partly suitable for livestock.

Facts and figures

- 70 km quays and dykes
- 50 km new road
- 29 mounds and made to measure solutions
- 38 traffic bridges
- 12 grinding mills and 17 windmills
- 4 million m³ ground transport (approx. 300.000 x )

Planning

- 1 Project decision
- 2 Preparatory work
- 3 Groundwork
- 4 Completion water safety



Effect

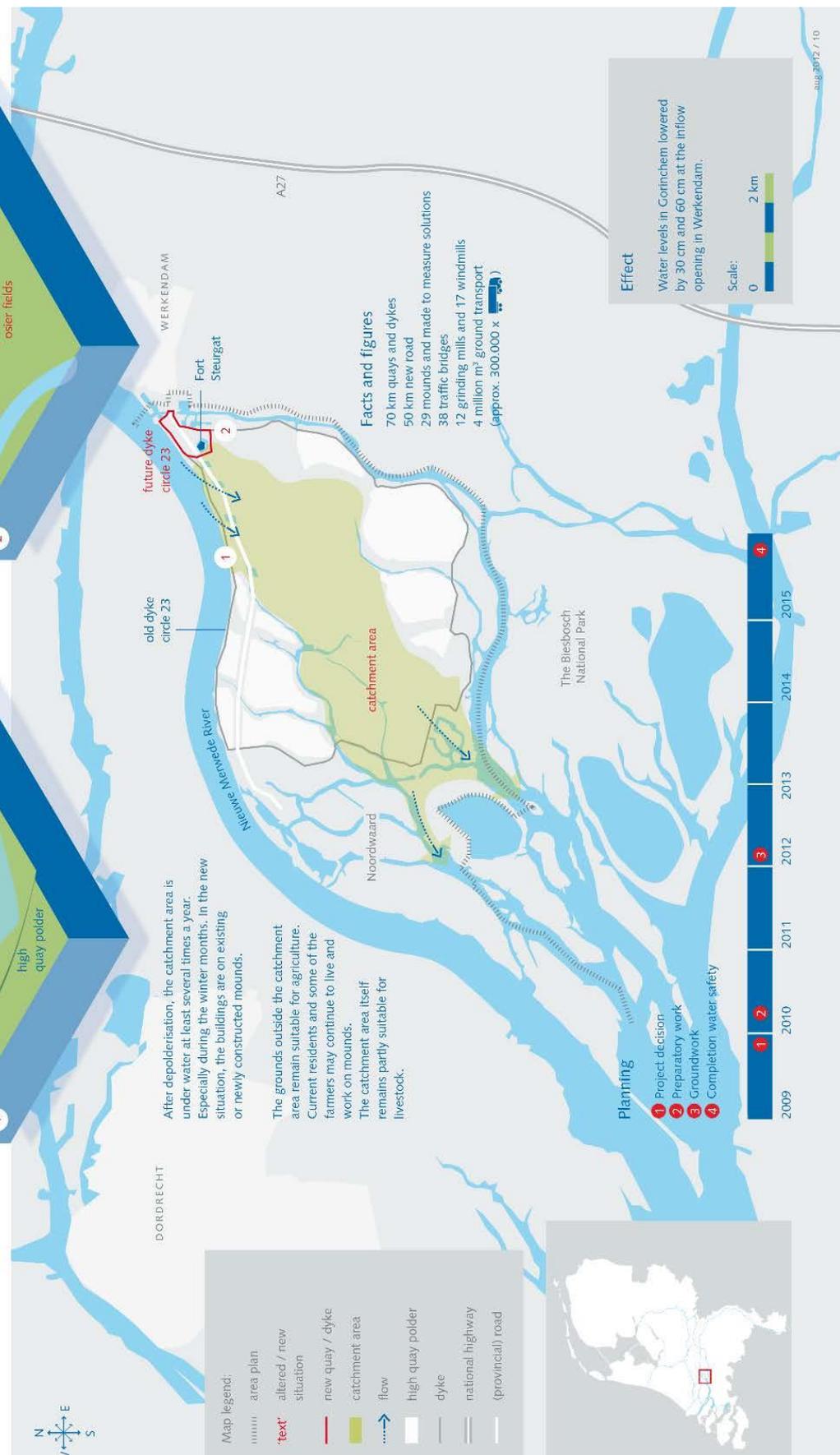
Water levels in Gorinchem lowered by 30 cm and 60 cm at the inflow opening in Werkendam.

Scale:
0 2 km

aug 2012 / 10

Map legend:

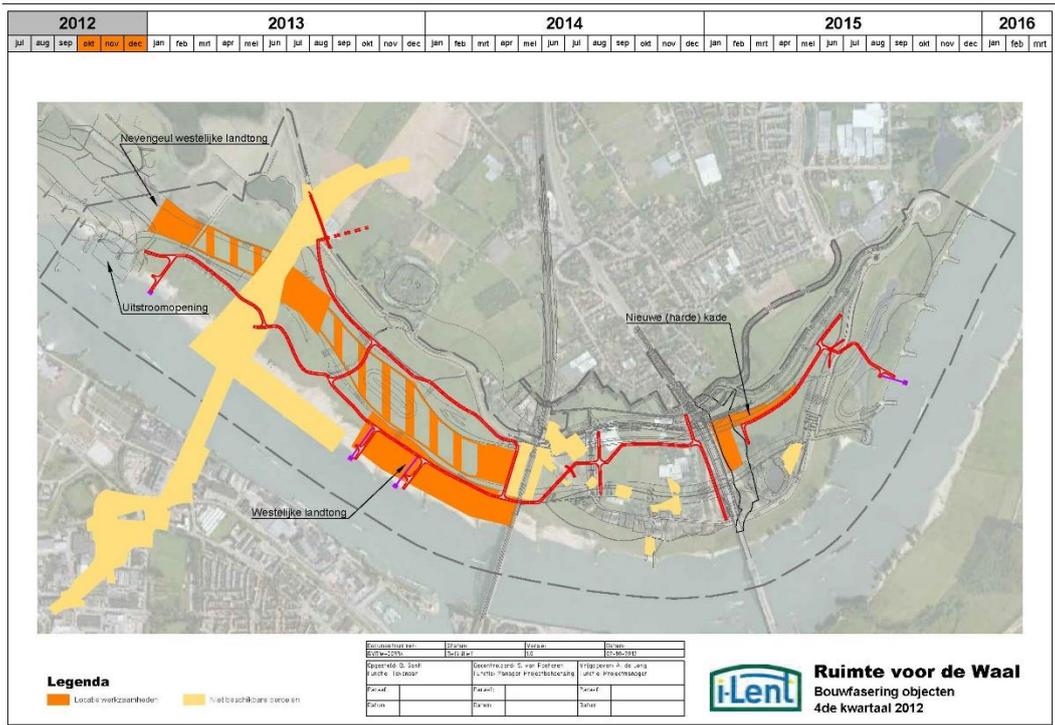
- area plan
- altered / new situation
- new quay / dyke
- catchment area
- flow
- high quay polder
- dyke
- national highway
- (provincial) road



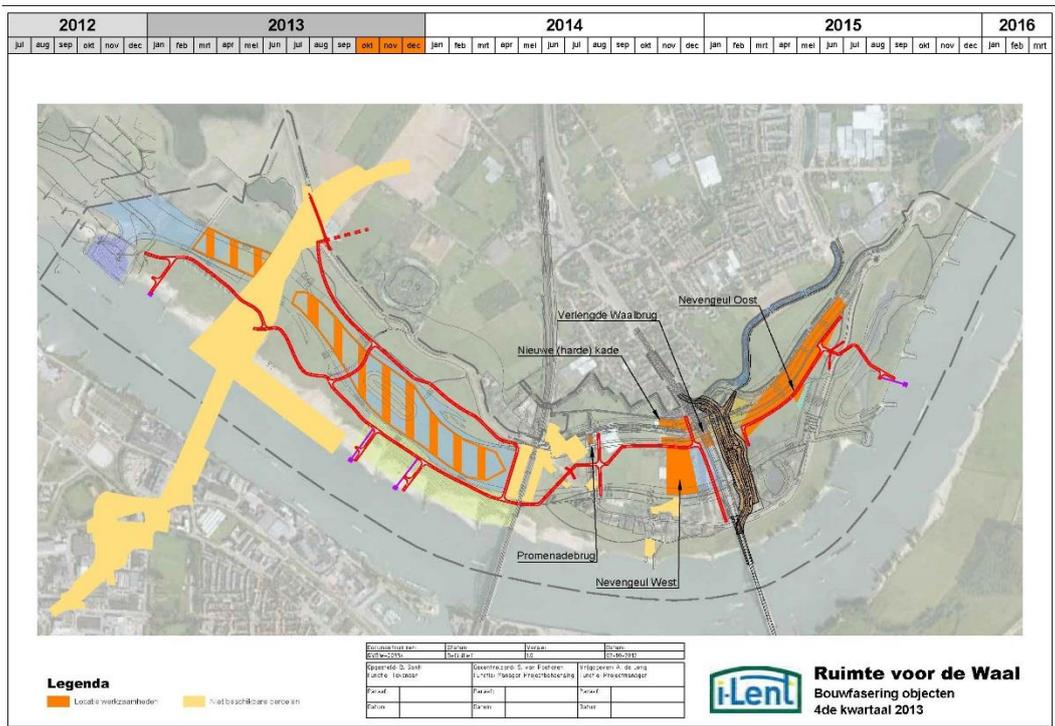
Appendix 12

Official timeline and construction progress for Nijmegen (Room for the
River)

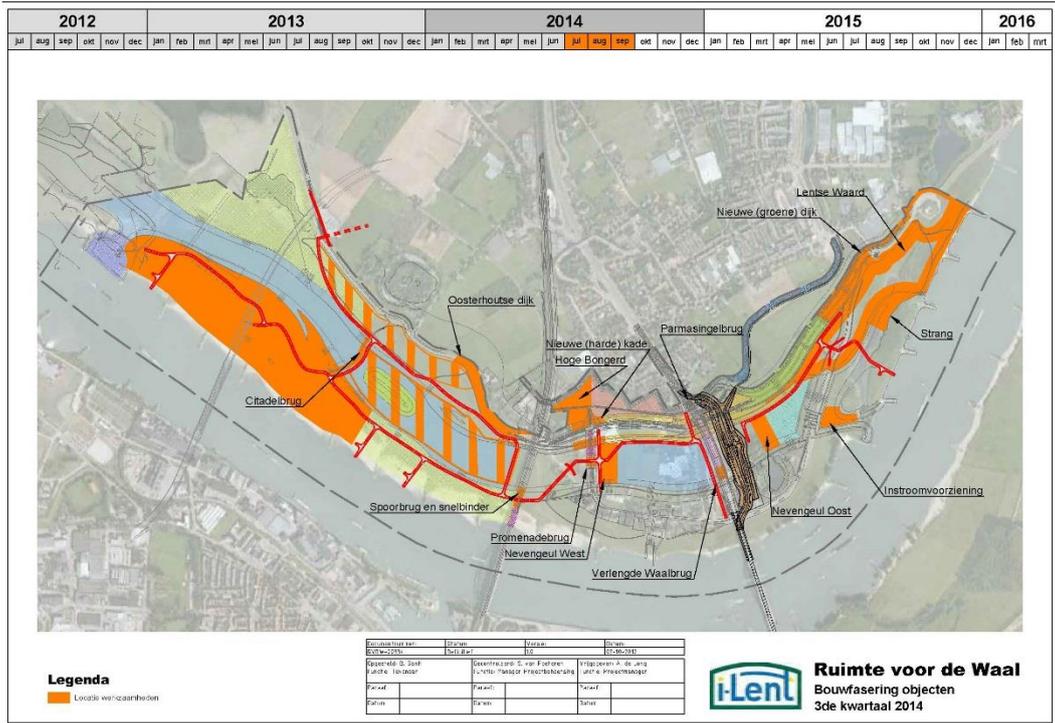
pp. 1, 5, 8, 12



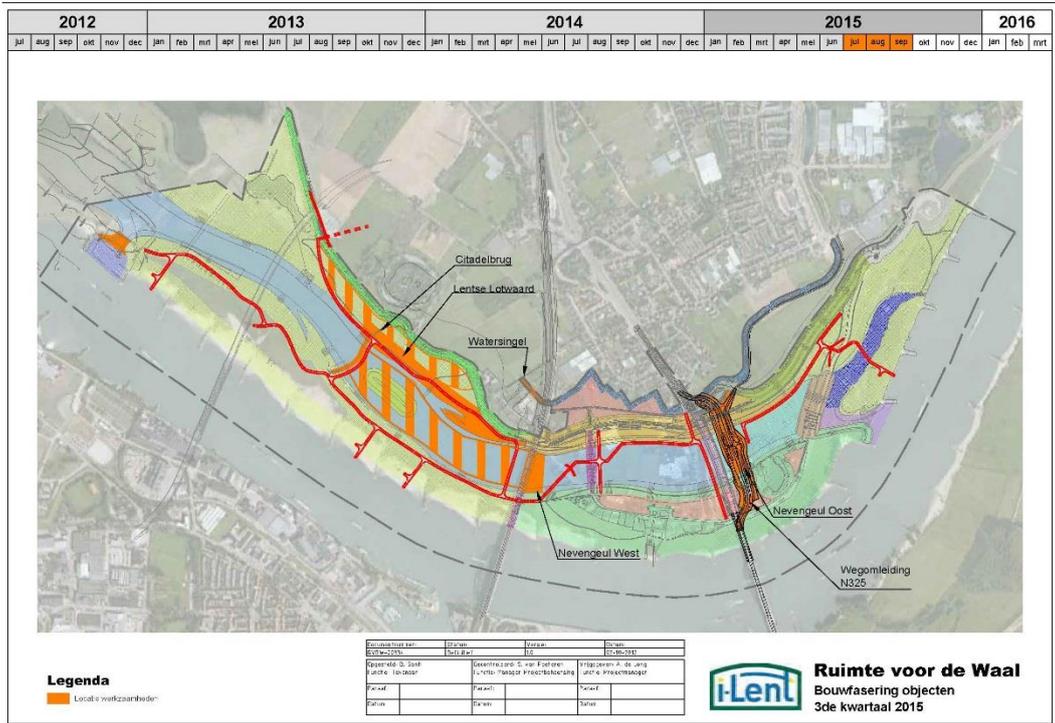
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RVDW-000334_4q4



RVDW-000334.dwg



RVDW-000334.dwg

Appendix 13

Context Appraiser – Omgevingswijzer
pp.1-3



Rijkswaterstaat
Ministry of Infrastructure and the
Environment

Omgevingswijzer (Context Appraiser)

Creating opportunities for sustainability: people, planet, profit



Sustainability plays an important role in an increasing number of Rijkswaterstaat projects. But when can we say that a project or process is sustainable? To help answer this question, Rijkswaterstaat has developed the *Omgevingswijzer* (or Context Appraiser) to map the degree of sustainability in projects such as those of the Meerjarenprogramma Infrastructuur, Ruimte en Transport (MIRT, Multi-Year Plan for Infrastructure, Spatial Planning and Transport). The *Omgevingswijzer* tool consists of twelve sustainability indicators and is intended to stimulate awareness and debate around sustainability, and to do this in a structured way. As well as this, the *Omgevingswijzer* is a support in jointly examining sustainability themes and putting potential problems into perspective. The appraiser helps gain insights into ecological, social and economic sustainability (planet, people, profit) and is freely available for all on omgevingswijzer.org (currently only in Dutch). The *Omgevingswijzer* is part of the Sustainable Infrastructure Project (in Dutch: Aanpak Duurzaam GWW).

What does the *Omgevingswijzer* deliver?

The *Omgevingswijzer* has already given new insights into a number of Rijkswaterstaat highway projects. It can be used to map potential local opportunities for sustainable area development, either before the start of a project or before the next phase of a project. Doing this provides a good basis to discuss these opportunities – and any associated risks – with the contracting authority and various regional parties. This is needed in order to make firm agreements about who is responsible for what objectives. This will avoid unexpected events occurring at a later stage, for example during the spatial planning procedures. The integrated character of the *Omgevingswijzer* goes hand in hand with

improving efficiency. A number of sustainability themes can be integrated during a project to allow synergy and other advantages to arise. The *Omgevingswijzer* makes the effects of synergy visible in a “Results Wheel “ (figure 1). Green signifies a positive impact and red signifies a negative impact.

Mutual strengthening creates greater spatial cohesion and offers opportunities for cost efficiency. A good example from practice is the building of the new Merwede bridge on the A27 near Gorinchem. By using the *Omgevingswijzer*, it transpired that a longer bridge, that appeared at first sight to be a more expensive option, would be a far cheaper option in the long run than a shorter bridge option.

How do you use the *Omgevingswijzer*?

The *Omgevingswijzer* can be found on omgevingswijzer.org. A questionnaire on the twelve sustainability themes can be filled in online, printed and kept. While it may be possible for an individual to answer all the questions, the *Omgevingswijzer* is best completed by a group of involved parties. This could be a project team together with external parties, if relevant. Filling in the questions brings shared knowledge to the table and stimulates a discussion about the outcomes. Stimulating a structured discussion about sustainability and associated opportunities is the most important objective of the *Omgevingswijzer*. The *Omgevingswijzer* allows the rationale on which the answers are based to be saved for later reference. Please see www.rws.nl/omgevingswijzer for further information.

The *Omgevingswijzer* in practice

A27 Merwede bridge

The Merwede bridge near Gorinchem is the major bottleneck of the very busy A27 highway. There are traffic jams at the bridge almost every day. Rijkswaterstaat is looking for ways to improve the traffic flow, and this has led to the development of a number of designs for a new bridge.

The Merwede bridge was the first project to use the *Omgevingswijzer* (figure 2). The analysis showed that what appeared to be a more expensive option for the bridge would ultimately be cheaper for Rijkswaterstaat. The ‘cheap’ bridge option was found to eventually need compensatory measures such as the building of dikes and would therefore ultimately be more expensive. Lilian Marcolina, business and community liaison officer for the A27 project at Houten-Hoopolder, says that the *Omgevingswijzer* could be used in the next project phases, in particular ‘to assess new location-related issues and where consultation with the various parties in the area can be done from the start. It is in

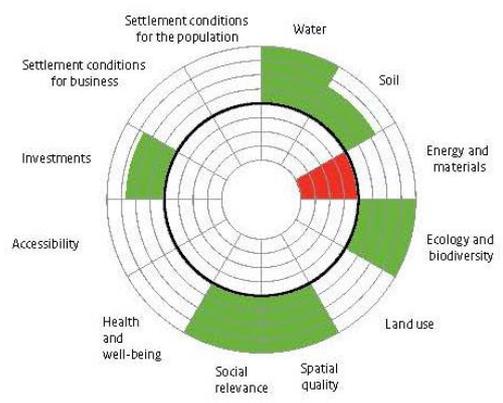


Figure 1: The *Omgevingswijzer* and its twelve sustainability factors



Figure 2: Using the **Omgewingswijzer** for the Merwede bridge. The 'cheap' option to the left shows mostly negative effects, while the 'expensive' option to the right shows mostly positive ones.

the design evaluation ('verkenning') phase that the rewards for any opportunities for sustainability can be best reaped. With hindsight, if the *Omgewingswijzer* had been used for the Merwede bridge at an earlier stage, it would probably have had greater influence on the design of the bridge options.'

A6 Almere Havendreef - Almere Buiten-Oost

One part of the Schiphol - Amsterdam - Almere highway expansion is the A6 between Almere Havendreef and Almere Buiten-Oost. The highway will be widened from 2x2 to 4x2 lanes and, parallel to Weerwater, lowered to ground level. The two kilometre long route will eventually cross the grounds of the Floriade 2022. The *Omgewingswijzer* was used during the contracting phase in preparation for the tender in 2015. The intention was to give greater structure to sustainability and the plans of the municipality of Almere to make the Floriade grounds a permanent green area. Martin Anneeze, contract manager, explains. 'The plan offered us the chance to put a number of sustainability ambitions into practice. After using the *Omgewingswijzer*, we were able to further work out a number of sustainability factors together with, amongst others, the municipality of Almere, the province of Flevoland, and Bouwend Nederland, the umbrella organisation representing the Dutch construction industry. It resulted in a number of opportunities such as self-cleaning hard shoulders.' Anneeze sees another advantage in using the *Omgewingswijzer*. 'It creates greater awareness because it brings together different perspectives of a project. This is important as projects are becoming more complex, partly because of the involvement of a growing number of parties.'

Gerrit Krol bridges, Groningen

Rijkswaterstaat is collaborating with the provinces of Friesland and Groningen on improvements to the Lemmer - Delfzijl waterway. One of the related projects is the replacement of the Gerrit Krol bridges consisting of a pontoon bridge for vehicles and two fixed bicycle bridges. Rijkswaterstaat took over the operation of the project from the province on 1 January 2014. The province will continue the implementation of this project in the next few years for Rijkswaterstaat.

In July 2013, Rijkswaterstaat organised a session with the provinces and municipalities under the guidance of the *Omgewingswijzer* team to bring greater structure to the planning study. The Business and Community Liaison Officer, Frank Steyaert explains. 'The bridge is the town of Groningen's biggest traffic bottleneck. Accessibility is therefore an important issue for consideration in the development of solutions. It will require administrative commitment, for example in the sharing of costs.'

The *Omgewingswijzer* became a means of communication in this project. 'It highlighted the different issues making them easier to discuss. This increased our understanding of the project. It also meant that all the parties involved now look at the project with that same understanding. This may result in solutions that go beyond purely the waterway itself, but extend to the spatial quality of the area.'

Appendix 14

Landscapes Principles Lluçanès



Principis fonamentals de la Carta del Paisatge del Lluçanès

"No et preguntis què pot fer el paisatge per tu, sinó què pots fer tu pel paisatge".

Volem un PAISATGE PER APRENDRE amb:

- Un sentiment de pertinença al nostre paisatge i una responsabilitat compartida.
- Un paisatge que inspira la responsabilitat i la cultura de la participació ciutadana i dels agents per la seva gestió i conservació.
- Una població conscient i amb coneixement del valor del paisatge del Lluçanès, que se'l fa seu i que disposa d'eines per implicar-se en la cura d'aquests valors.
- Uns propietaris i gestors del territori amb coneixement i recursos (eines i formació) per vetllar pel paisatge del Lluçanès.
- Un coneixement i una saviesa populars i tradicionals vius, reconeguts i que es transmeten entre generacions.
- Un espai acollidor i engrescador per a centres educatius, universitats i centres d'educació en el lleure que fomenta l'aprenentatge i la recerca i que té com a base de treball el paisatge.

Volem UN PAISATGE PER VIURE-HI amb:

- Un paisatge que contribueix a la qualitat de vida de les persones que l'habiten.
- Uns nuclis antics habitats i vius.
- Unes cases de pagès habitades i amb activitat.
- Un urbanisme que rehabilita, s'ajusta i s'adapta a la topografia i als teixits urbans existents, mantenint la tradició constructiva, els materials naturals i la idiosincràsia dels pobles, viles i cases de pagès del Lluçanès, i incorporant criteris d'eficiència energètica i sostenibilitat.
- Una planificació adequada i una gestió activa per a la conservació del patrimoni natural i la biodiversitat.
- Una gestió sostenible dels recursos naturals (sòl, qualitat de l'aire i recursos hídrics) del Lluçanès.
- Un patrimoni arquitectònic, històric i artesanal valorat i present en l'urbanisme dels nuclis i dels disseminats.
- Un espai públic dinàmic i cuidat gràcies al civisme de tots i totes.
- Uns espais enjardinats amb vegetació autòctona, adaptats a les característiques del territori.
- Unes infraestructures ben dimensionades i integrades en el territori i el paisatge.
- Un patrimoni intangible (llegendes, fires i mercats, festes, costums...) propi del Lluçanès que defineix el seu tarannà.

Volem UN PAISATGE PER GAUDIR amb:

- Un paisatge atractiu, tant per a la població local com per a visitants, que convida a estar-s'hi i descobrir-lo de diverses maneres.
- Un paisatge conegut i reconegut més enllà del Lluçanès pels seus valors i les experiències que se'n deriven.
- Un turisme respectuós amb el paisatge i les activitats del territori, que segueixi un model definit i promogut des del Lluçanès.
- Uns serveis turístics unificats i coordinats per al conjunt del Lluçanès.
- Uns serveis i recursos turístics pensats a una escala ajustada, sense massificacions.
- Uns camins (de transhumància, històrics, itineraris, senders...) catalogats, ben senyalitzats amb criteris unificats i ben mantinguts.

Volem UN PAISATGE PER TREBALLAR amb:

- Un paisatge que inspira activitats econòmiques innovadores i l'emprenedoria.
- Unes activitats econòmiques que afavoreixen un paisatge saludable i de qualitat, i que per tant són compatibles i vetllen per la seva conservació.
- Una activitat econòmica adaptada a la capacitat de càrrega del territori, de baix impacte ambiental i que busca la sostenibilitat.
- Una producció agroramadera de qualitat i ben dimensionada respecte el territori, amb productes locals reconeguts, i on el paisatge n'és un valor afegit i un tret distintiu.
- Una gestió forestal coordinada i coherent amb la resta d'activitats del territori, i que contribueix a la prevenció d'incendis.
- Uns polígons d'activitat econòmica ben dimensionats i posicionats al territori amb criteris de sostenibilitat i d'integració paisatgística.

Volem UN PAISATGE PER COMPARTIR amb:

- Una gestió del paisatge basada en el diàleg, el pacte i la cultura de l'acord.
- Una ordenació del territori coherent i coordinada de forma supramunicipal a nivell del Lluçanès.
- Una col·laboració i coordinació de les polítiques del paisatge del Lluçanès amb administracions i agents d'altres territoris.
- Unes entitats implicades en la conservació de les tradicions i dels valors del Lluçanès i amb capacitat per a actuar d'acord amb les seves competències.
- Unes administracions locals que prioritzen el benestar de les persones.
- Un govern del paisatge exercit "des de baix", amb la participació i el compromís d'uns agents (persones, administracions, propietaris, entitats...) que col·laboren i treballen en xarxa.



**Consorci del
LLUÇANÈS**



**Diputació
Barcelona**

Appendix 16

Questionnaires and Consent Form

A landscape way of seeing...low carbon

Anastasia Nikologianni, Professor Kathryn Moore and Professor Peter Larkham

We would appreciate your response to this research.

What do you understand is meant by the term low carbon in the context of urban development?

In what ways do you think low carbon design is expressed in the finalists projects?
(Wolfson Prize introductory poster and final submission presented in the three landscape posters of the exhibition)

Are there any other spatial aspects relating to low carbon or sustainability that could have been expressed in these drawings? (Finalists projects or if you think appropriate in the analytical drawings-by the researcher)

What other important issues of regional design are evident in the drawings?

Which drawings did you find to be most effective or expressive of a sustainable regional design? (Finalists submissions or if you think appropriate researcher's drawing analysis. Please give drawing or poster name.)

If you are willing to be contacted regarding this research, please leave your details here.

Name:
Profession:
Email:



Example Interview Questions

- Exploring the input from the architectural practice to Uxcester project. How did you start thinking about the competition and the design? What was the process that led to the final result such as this diagram/masterplan?
- What low-carbon communities look like? What do you, as a planner, understand as ‘low carbon’?
- How an area is established as low carbon?
 - Using low carbon materials
 - Designed as ‘low carbon’ , what do we mean with this
 - Produces as much energy as it is consumed
- How do you see this (low carbon) as ‘key’ to be presented in the competition’s diagram? Is the masterplan diagrammatic because of the fictional site or you believed it wasn’t necessary, since it was an economical competition?
- This is a fictional plan, that you propose can apply to any place. How is this possible? What about the problems that an individual city can face? Isn’t it a chance that these individual difficulties will change the whole plan?
- Knowing that it’s based in Ebenezer Howard... do you think that this trellis system will create repetitive areas? Trying to understand if this is on purpose or just because you didn’t produce an actual masterplan.
- You’re referring in the proposal that ‘it is about process as much as design’ and that your focus is in the economics of this proposal. Can you explain a bit more about these?
- How do you communicate a message? In diagrams or words?
- How did you communicate with the rest of the team?
And what happened until the time you managed to have the final proposition ready?
- When the team had these ideas sorted out? How did you communicate these ideas to the focus groups? And how to the competition? Was it a different way/method?
- How do you communicate graphics?
- Where was the role of drawing embedded in these terms or process?
- Can another way be to visualize climate change implications? In order to see a ‘low carbon’ impact on the master plan?
- Do you believe visuals are more powerful than numbers? Do visuals ‘stay’ with people more/longer than numbers? (as it happens with climate change?)
Remember visuals easier than numbers?
- We know what the final competition entry looked like. Do you still retain working documents, sketches? Or have you throw them away?
- Can you give me an example? Do you use quick sketches, computer generated images? Other techniques? May I have an example? Sketch over the main ideas.

- Looking about ideas and the balance with the graphs. How do you balance ideas/text and the graphs? Do you have some of the old drawings showing that?
- Is low carbon a matter of behavioural change?
- Can we motivate action on stabilizing climate change by applying landscape visualization?
- Does visualization of a masterplan make it more personal, as it does with climate change? (ex. Images of climate change, disaster, problems)
- Do you think that 'visual imagery' has a dramatic effect on behavioural change?
- Housing: Are you satisfied from the nature of the housing provision in the plan overall? How you can see to the specific low carbon agenda for housing?
- Is the use of visual tools and processes just to promote action (climate change) or they can be used to communicate ideas?
- In what stage of the design do you show the visuals? To experts, team, public etc.
- You are proposing to take a generous piece of the green belt, knowing that this is a bold move politically. Why did you do it? Was it economic reasons or design reasons?
- Maybe creating the extensions be an economical viable solution, but what about the environmental/low carbon aspects. How would you motivate the residents to use public transport since there is no employment or retail in there?
- Why all the 'sustainability' indicators, such as walking, cycling routes, bus, tram are not presented in the masterplan? Matter of scale?
- We have seen in Stoke project that they used the floods to create a buffer district, when you are avoiding to use this areas. And we don't see the water element as a key one. Is any particular reason for this?

Full title of Project: **The role of drawing, design and low carbon in regional landscape based spatial strategies**

Name, position and contact address of Researcher: **Anastasia Nikoligianni, PhD Candidate, ADM, Birmingham City University, Birmingham, UK**

It is becoming increasingly difficult to ignore the spatial and visual impacts resulting infrastructure projects and the effects of climate change on the landscape. Current major environmental issues have significantly increased the interest for a green development of the existing and future infrastructure. Although there is need for a sustainable approach in strategic and urban forms, there is no evidence on how to embed it in spatial scale in a way that will create an integrated regional strategy.

Based on the importance of these major issues and having the support of Climate-KIC partnership (an EU's climate innovation initiative), the interest for a research that merges design and function was developed.

This project intends to give a new dimension to the understanding of low carbon into the design process and demonstrate the extent to which pictorial forms can benefit the process, the final product of a design and the dissemination of the ideas. Moreover, it has the ambition to embed low carbon and aesthetic approach into regional strategies to provide a strong conceptual basis for arts led low carbon education and practice.

Purpose of the study

To establish a new way of conceptualising and delivering infrastructure projects, to contribute to an emerging European and global focus on large scale spatial design, and examine the contribution of visual/spatial information in the process.

Research Aims

This study aims to investigate the extent low carbon and spatial quality can be delivered in regional infrastructure projects and the way visual representations and pictorial forms such as drawings, diagrams and images contribute to the design process and change the way we view regions and their landscape potential.

Within regional, landscape based strategic spatial projects the Objectives of the investigation are to:

- Identify the extent to which low carbon principles and spatial planning are associated
- Investigate how the spatial dimension of low carbon is demonstrated/embedded
- Evaluate the role and nature of aesthetics and low carbon priorities
- Examine the relationship between aesthetics and landscape quality in large scale infrastructure projects
- Evaluate the role of drawing and mapping in regional landscape strategies
- Examine ways that drawings and diagrams can impact on the design discourse and decision making

Please Initial Box

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.
2. I agree to take part in the above study and consider how visual representations (drawings, maps, 3D etc.) affect the design process.
3. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason.
4. I agree to the interview / focus group/ consultation being audio recorded.
5. I agree to the use of quotes in publications.

Name of Participant

Date

Signature

Name of Researcher

Date

Signature

Appendix 17

Conferences and Publications

- I. World Design Summit, 16-25 October 2017, Montreal, Canada
- II. 3rd International Conference on “Changing Cities”, 26-30 June 2017, Syros, Greece, “Sustainable landscape design; key ideas for successful implementation”, (paper for peer review – attached)
- III. RESCON 2017, 5th April 2017, Birmingham City University, Birmingham, UK, “Effective delivery on sustainable landscape design”, (Poster attached)
- IV. 5th International Conference of Creative Cities, 24-27 January 2017, Porto, Portugal, “Landscape and the city; creating a sustainable development”, (paper attached)
- V. 6th International Congress on Landscape and Urban Horticulture – ISHS, 20-25 June 2016, Athens, Greece, “Effective ways to deliver sustainability in urban and regional landscape strategies”, (paper attached)
- VI. 53rd IFLA World Congress, Tasting the Landscape, 20-22 April 2016, Turin, Italy “Understanding landscape; the process to a quality and sustainable space”, (paper attached)
- VII. Regional Urbanism in the Era of Globalisation, 3-5 February 2016, Huddersfield, UK “Socialisation and implementation of landscape ideas for a sustainable regional development”
- VIII. Sense - Experiment - Surprise - Understanding: PhD Research in Practice, 21-22 January 2016, Nottingham Trent University, UK, “Design Interpretation to Regional Landscape Planning”
- IX. RESCON 2015, 11th December 2015, Birmingham City University, Birmingham, UK, “Landscape Idea; Concept & Implementation Strategies”
- X. RESCON 2015, 11th December 2015, Birmingham City University, Birmingham, UK, “Identified spatial quality in climate adaptation landscape projects”, (Poster attached and DVD)
- XI. RESCON 2014, Exploring Research Development, 15 December 2014, Birmingham, UK, “Low carbon as a critical element in landscape regional infrastructure”

- XII. RESCON 2014, Exploring Research Development, 15 December 2014, Birmingham, UK, “Low carbon as a critical element in landscape regional infrastructure’’, (Poster attached and DVD)
- XIII. Making Transitions Happen, Perspectives and Opportunities for 2015, 2-4 December 2014, “The role of drawing, design and low carbon in regional spatial strategies”
- XIV. Planning for Sustainable Urban Form, 12-14 November 2014, Karlskrona, Sweden, “Low carbon as a critical element in landscape regional infrastructure”

Appendix 17

II. Sustainable landscape design; key ideas for successful implementation

Sustainable landscape design; key ideas for effective implementation

A. Nikologianni^{1*}, K. Moore¹ and P. Larkham²

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Abstract

This paper forms part of wider research looking at pioneer landscape strategies across Europe, examining the extent to which low carbon, sustainability and spatial quality can be delivered effectively on urban and strategic scale, and covers examples from the 'Landscape Observatory' (Spain), the 'Room for the River' and 'New Dutch Waterline' (Netherlands), and the 'HS2/HS2LV' project (UK). This paper presents the Netherlands and the UK case studies, illustrating effective ways where the key issues of low carbon and quality of space are integrated in the design framework and the impact this has on the decision making. The case studies have shown that effective implementation requires visual communication and an in-depth understanding of how the concepts of sustainability and spatial quality are expressed. Policies, and legislation are also considered significant for landscape based developments.

Keywords: sustainability, low carbon, climate adaptation, landscape design, spatial quality

1. INTRODUCTION

This paper investigates the project process and implementation practices of two case studies in the UK and the Netherlands, exploring innovative approaches that lead to best practices and successful sustainable landscape schemes. Examining examples which have dealt with low carbon and spatial quality, it demonstrates how such issues are interpreted on a large scale and the impact on the landscape. The Netherlands case study consisted of two national landscape projects, the Room for the River and the New Dutch Waterline, and shows how water safety, hydrological efficiency and sense of place equate to low carbon and design quality. The Room for the River is a climate adaptation scheme addressing flooding, while the New Dutch Waterline aims to create new uses for the old defense line of the Netherlands preserving the historical and environmental characteristics of the area. The HS2/HS2LV, UK's major infrastructure project, demonstrates the contradiction between the plans developed for a railway engineering project (HS2) and the proposal for the establishment of a 'symbiotic relationship between the landscape' [1], known as HS2LV.

The chance given to this research the opportunity to observe and evaluate innovative landscape schemes has resulted in the identification of effective processes that improve environmental elements and communication methods in strategic schemes. The way the key issues of low carbon and spatial quality can be embedded in regional strategies and the importance of visual communication have been examined. As Stephenson [2] states, 'presenting landscape as 'space' has a long pedigree in assessment practice, but conveying its rich and messy place-values is still a rarity in practice'. Literature has challenged the interpretation of low carbon questioning if this is based on activities, lifestyles and voluntary behaviour change or policy frameworks that are based on regulatory force [3]. The acceptance of the variability of its interpretation in a European and international level [4,5] highlights the flexibility adopted by the landscape projects. Spatial quality is also unclear as a concept particularly since it relates to many disciplines. For some, quality of space should satisfy the expectations of the community [6,7], while for others it speaks about elements of spatial indications

[8]. The paper illustrates the potential of embedding these key issues in regional landscape strategies and presents successful ways for their delivery.

2. MATERIALS AND METHODS

This study based on the regional landscape projects intends to explore, identify and communicate the ideas of a sustainable landscape community. Using the innovative case studies presented above the paper aims to reveal key ideas and effective ways that a sustainable landscape plan can be achieved on a strategic scale. The research methods used include field visits, interviews, observations and drawing examination in order to find out how the landscape ideas, low carbon and spatial quality concepts have been implemented. During the field visits at the live projects the researcher observed the project process, collected plans and maps, and interviewed key stakeholders involved in the schemes.

2.1 Two national schemes of the Netherlands

The Room for the River is a climate driven strategic landscape scheme, implemented to address hydrological efficiency due to increased rainfall and rising sea levels. It is a national programme, developed in 34 locations across the Dutch landscape (Figure 1). The significance of a landscape adaptation programme considering water safety at a large scale, dealing with sense of place and future sustainability makes an excellent example for the purposes of this research. Room for the River extends across the whole country covering urban and rural locations, demonstrating that sustainable areas can be successful at a wide range of landscape characters.



Figure 1: Map presenting all the 34 locations where landscape projects of the ‘Room for the River’ programme were developed. Source: official document-collected by Author from Rijkswaterstaat, July 2015.

The New Dutch Waterline consists of approximately 60 different fortresses across the Netherlands (Figure 2). It is based at the old military defence system, originally designed in the 19th century, able to enable controlled inundation through sophisticated landscape engineering. The goal of the

scheme was to preserve and revitalise the historical landscape, enhancing community engagement, sustainability and quality of space.



Figure 2: Left: Map of the ‘New Dutch Waterline’ landscape scheme showing the locations of the fortresses Right: Showing the whole defence line, the locations around the fortresses that are now regenerated open areas. Source: public material – collected by the researcher from Water museum, the Netherlands, July 2015.

2.2 An engineering approach and a landscape vision for the UK’s major new railway

The HS2 and HS2 Landscape Vision (HS2LV) case study explores how low carbon and spatial quality landscape strategies can raise the profile of the region supporting social and economic growth. HS2 is a high-speed railway (Figure 3) aiming to link London, Birmingham, East Midlands, Leeds, Sheffield and Manchester, while HS2LV proposes to widen the conceptual and territorial scope of the high-speed line based on a broader way of dealing with major infrastructure. HS2LV aims to transform a linear engineering project –such as HS2– into a sustainable innovative approach attracting local, regional and national interest, and enhancing social and economic aspects of the region. The communication role that visuals play in the way a message is conveyed in strategic schemes will be also presented in this paper.

3. RESULTS AND DISCUSSION

The case studies have developed individual processes through the various conceptual ideas of the landscape projects, generating a richness of interpretations and methods to make a project successful. The governmental and political commitment to design quality and environmental stability is shown by the economic support, provided to the schemes, creating a political agenda that embeds such key issues in regional design. The paper argues that a new mechanism, focusing on the integration of ideas such as low carbon and sense of place, will have a potential impact on

governmental values as well as the transformation of the project’s delivery and outcome [9]. Evidence shows that policies and legislation have significant impacts on the implementation of strategic schemes and therefore the ability to develop a range of processes integrating social, environmental and economic elements through landscape design is important.



Figure 3: Plan for phase 1 (London–Birmingham) and phase 2 (Birmingham–Manchester & Leeds) of HS2 route. Source: Department for Transport, UK.

3.1 Hydrological efficiency and quality of space

Data collected during the case studies demonstrate a great diversity and richness in the way design quality, water safety and ecological elements are interpreted in the schemes. Both interviews and observations reveal that these terms might be ambiguous, but can be uniquely interpreted by the project team in a way that suits the vision of the scheme and addresses the needs of a specific area. Examples extracted from the examined case studies, such as the project of Noordwaard (Room for the River), form an environmental and popular for the community landscape design.



Figure 4: Noordwaard landscape project. The masterplan illustrates the area of development, the water, agricultural areas and mounds where the housing has been established. Source: Annika Hesselink.

Noordwaard (Figure 4) is developed as a natural area able to face the challenge of water level rise, while at the same time creates an environmental friendly and natural space. The project can accommodate cycling and walking routes, boat cruises and engage with the community enhancing climate awareness. Evidence collected during the case study has revealed that the focus on water safety, agriculture, inhabitants and spatial quality at this location were priorities of the Netherlands secretary of state. The creation of a nature network, recreation opportunities, strong identity for the natural park Biesbosch (Natura 2000), located in the area, and preservation of the historical and cultural structures of Noordwaard such as the Fort Steurgat, have secured the development of a significant project considering both environmental stability and sense of place (Figure 5). Key steps in the successful implementation of the scheme were the governmental support as well as the dissemination of the aims with the public, which supported this ambitious development.



Figure 5: Noordwaard landscape project. The visualisation demonstrates the creation of an environmental friendly and quality space, where activities engage the community enhancing climate awareness. Source: West 8.

The second national scale scheme of the Netherlands, New Dutch Waterline, also deals with ecological soundness, aiming to preserve the landscape while creating new uses for the existing fortresses across the old defense line. The scheme has transformed the existing fortresses into areas of cultural restoration, touristic sites, entertainment venues and natural areas. A successful example is the Fort Werk aan't Spoel (Figure 6) which preserves the former military elements, bunkers, bomb-proof buildings and old inundation locks. The regeneration of the landscape and the creation of new uses gives the opportunity to locals and visitors to find out about national history, while enjoying a sustainable and beautiful landscape. The new fort house, shown in Figure 6, operates as a restaurant together with an outdoor landscape amphitheatre both taking inspiration from the past monuments, transforming a historic area into a social space, offering a wide variety of indoor and outdoor activities. Having become an attraction in the New Dutch Waterline, Fort Werk aan't Spoel offers a combination of nature and social engagement while the same time preserving a historic landscape for the Netherlands.

The national scheme of the New Dutch Waterline aimed to address hydrological efficiency, in a different way to the Room for the River, by preserving and improving the existing land around the fortresses. Spatial quality was also a significant element in this scheme, but it is identified as an idea of preservation, cultural enlightenment, touristic opportunity and celebration of the historic legacy. Therefore, it can be suggested that the interpretation of the low carbon and spatial quality concepts is flexible, aligning with the vision of a strategic scheme. But the engagement of the community, the establishment of a project team that has the support of the legal entities in each country and the integration of key ideas in the project process results to better integration of such concepts in the landscape design, creating sustainable and quality spaces.



Figure 6: Fort Werk aan't Spoel. Old and new development combines historical and leisure areas. Source: Rob't Hart (Muilwijk, 2015).

3.2 Effective communication of the landscape vision enhances successful implementation

This paper suggests that effective visions are conveyed through design and drawings; and, therefore, the establishment of a landscape narrative that merges in the landscape and the city is an important factor for the integration of issues such as low carbon and spatial quality. Exploring the proposal for the high-speed railway line (HS2) and the HS2LV, a research project that offers an alternative development to the engineering scheme, this paper has extracted important elements regarding the communication of a landscape vision. HS2 was initially focusing on a linear engineering scheme where the railway line, due to current project structure and policy, was going from the macro scale of the scheme right down to a very detailed level. HS2LV proposed that a narrative and a strong design concept for low carbon lifestyle will benefit the implementation of the scheme and engage the community. During the project development, it was revealed that the HS2LV drawing (Figure 7) managed to give a series of exciting possibilities for the region, without micro managing specific spots and areas in the land. Presenting land values, cultural and social characteristics and enhancing economic stability, since it highlights the existing valleys and environmental areas, Figure 7 became a communication tool for the landscape vision of HS2 in West Midlands (Phase 1 – Figure 3).

Interview and case study evidence has revealed that the drawings often play a key role in the communication of the project’s narrative, illustrating key issues such as spatial quality and sustainability in a way better suited to the audience. HS2LV using a series of drawings and visuals was able to communicate a vision for the landscape, engaging communities and changing perceptions for the impact of the new railway line in the region. It is considered significant for the governmental policy of the UK, demonstrating a different image of the region and integrating environmental and social ideas for the city of Birmingham and its surroundings through landscape design. Data collected during the case studies suggest that a landscape vision needs to be presented visually as well as in text in order to result in better communication of the concept. Building a vision through drawings, as happened with HS2LV, allows us to ‘materialise’ the key ideas, creating various interpretations depending on the concept and character of the landscape strategy. Establishing a low carbon and quality landscape vision and communicate these ideas to the broader audience is not easy, but this study aligns with Lutz [10] who suggests that it is possible to describe an attractive and sustainable place and suggests that the most effective visions are conveyed through design and drawing.

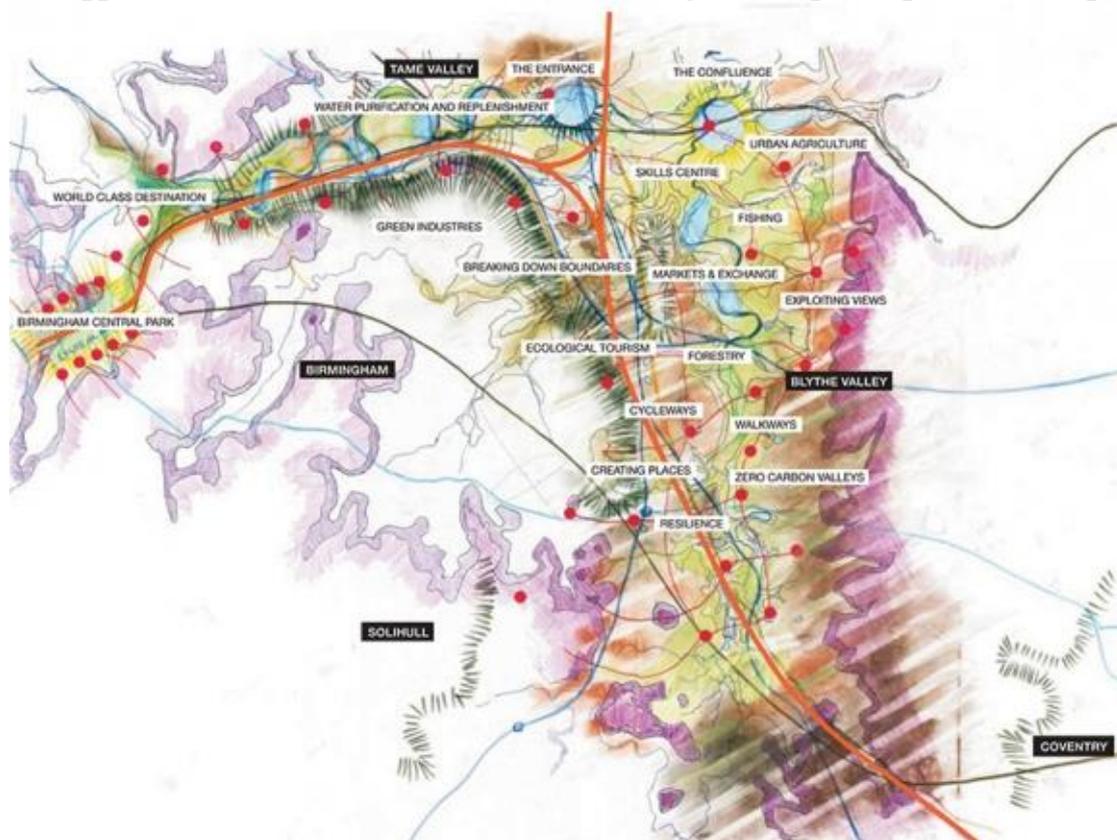


Figure 7: Drawing created to reveal the landscape identity and illustrate an iconic landscape for HS2LV proposal in the route between London-Birmingham. The drawing illustrates the railway line, the valleys and environmental areas of the region as well as the high points with significant views. Source: Kathryn Moore personal archive.

4. CONCLUSIONS

The case study investigation has revealed that effective implementation of a sustainable and quality landscape project depends on a series of different processes. The concepts of spatial quality and low carbon are often flexible in their understanding and therefore easy to be interpreted in various ways depending on the aim and vision of the strategic development. However, their early integration in the project process has substantially beneficial results for the scheme. The

development in these pioneer projects of surrogates such as water safety and ecological soundness has shown that the key issues of a strategic scheme can equate with something more tangible depending on the location and project aims. This method, together with the creation of a landscape vision improves their spatial understanding and therefore their delivery on a large scale.

Findings on the role of drawings and visuals during the project process suggests that pictorial forms can be a major communication tool. Their effective use from the early stages of the project development shows that low carbon and quality concepts can be communicated in a different way, creating a powerful landscape narrative. Identifying the lack of articulation of the landscape concept in legislation, the study highlights that policies act as a way to enhance the principles of design, low carbon and spatial quality, and persuade politicians and civil servants to consider the vision and the outcomes of each landscape scheme from the very beginning, resulting to a more sustainable and quality landscape scheme.

4. ACKNOWLEDGEMENTS

The authors want to thank Climate-KIC, which has supported this research throughout, as well as all the participants at the Room for the River, the New Dutch Waterline and the HS2/HS2LV strategic schemes.

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Appendix 17

III. Effective delivery on sustainable landscape design

Effective delivery of sustainable landscape design

RESCON 2017

Introduction

This paper forms part of a wider research looking at pioneer landscape strategies across Europe, examining the extent to which low carbon, sustainability and spatial quality can be delivered effectively on urban and strategic scale, and covers examples from the Landscape Observatory (Spain), the Room for the River and the New Dutch Waterline (Netherlands).

Methodology

Two case studies are used to illustrate the potential of this approach. The example of the Landscape Observatory in Catalonia is based on a framework of sustainable development, increasing knowledge for the landscape and monitoring the landscape changes. The Netherlands case study examines two national programmes, the 'Room for the River' and the 'Dutch Waterline', demonstrating how the idea of landscape, low carbon and design quality can shape the implementation of landscape strategies.



Visualisations of the 'Room for the River' Project in Laredo (Spain), illustrating concepts such as water edge and spatial quality. Images are courtesy of the project's steering group in the research programme, and provided by the municipality of Laredo.



Showing how a different identity project in this case creates landscape spaces. Visualisations of the 'Room for the River' Project in Laredo (Spain), image provided by the municipality of Laredo.

Catalonia: An identity to the region

The Landscape Observatory, established to help implement the European Landscape Convention (ELC) in Catalonia, has succeeded in bringing attention to the landscape and create a landscape oriented culture. It has managed to integrate the concept and principles of ELC to such an extent that there is now a public law protecting landscape. Overall the activity of the Landscape Observatory has managed to shape the way people perceive Catalonia. Developed tools such as landscape catalogues, dissemination material and visuals it has changed perceptions on the way institutions and public view regions and their potential.

The photo of Barcelona, Catalonia and the landscape have been captured by the researcher and some have been amended for the needs of this poster.

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Photo: Landscape Observatori, Barcelona, Spain

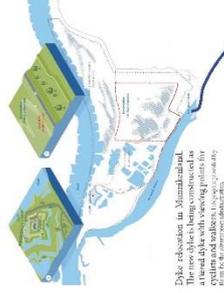
Conclusion

The paper illustrates ways that the landscape ideas can be interpreted to reality in a way that results to a quality and resilient place. It is suggested that the successful delivery of a landscape strategy can be strengthened by the establishment of a holistic mechanism which integrates the landscape idea, the environmental and social assets as well as a vision for their implementation.

The way drawings and visuals inform strategic design and planning, enforce the notion that better understanding of low carbon and quality concepts is crucial for the development of the project process and that pictorial forms play a key role in the communication of key ideas.

Netherlands: Design Implementation

The Room for the River is a landscape adaptation programme addressing a high-risk climate issue such as flooding, while the Dutch Waterline aims to preserve the existing landscape and historical infrastructure. The emphasis on landscape quality was given from the very beginning of both projects by integrating into a public law.



Dike relocation in Middelwaard. The dike is now a road and a bicycle path, with a road and a bicycle path on top of the dike. The dike is now a road and a bicycle path.



Dutch Waterline dike. Created by Rijkswaterstaat. Adding a bicycle path enhances the dike's ability to absorb water, while also providing a safe and pleasant way to travel.



Dike in Noordwaard. Dike that will be increased allowing the Nieuwe Merwede river to flow more rapidly, which is allowing high water levels to pass by the dike. The dike is now a road and a bicycle path.



Dike relocation in Laredo. Project of the Room for the River programme, the dike is now a road and a bicycle path.



Photo: Landscape Observatori, Barcelona, Spain

Appendix 17

IV. Landscape and the city; creating a sustainable development

LANDSCAPE AND THE CITY; CREATING A SUSTAINABLE DEVELOPMENT

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Resumo

Este artigo examina o potencial de adotar uma abordagem holística em estratégias urbanas e regionais, a fim de compreender de que forma é que estas podem contribuir mais eficazmente para os atuais desafios globais. Investigação de carácter estratégico mais abrangente, que investiga em que medida baixo carbono e qualidade espacial podem ser implementados a nível regional, demonstra que existem benefícios na adoção de uma série de processos para implementar desenvolvimento urbano integrado e sustentável.

Os casos de estudo examinados incluem o Observatório da Paisagem (Espanha), o Room for the River (Holanda) e o HS2/HS2LV (Reino Unido). O Observatório da Paisagem tem vindo a sensibilizar o público para o valor da paisagem de tal modo que existe agora uma lei pública que protege a paisagem na Catalunha. Uma investigação baseada em projetos que se centram na adaptação climática na Holanda demonstra o potencial e o significado da introdução de baixo carbono e qualidade espacial em projetos de infraestrutura urbana e regional. Uma análise ao projeto ferroviário de alta velocidade HS2, no Reino Unido, ilustra como poderá ser possível influenciar a perceção e o desenvolvimento de um projeto de engenharia singular, a fim de transmitir uma visão mais ampla e sustentável, e o impacto que isso pode ter em paisagens de futuras cidades, vilas e áreas rurais. A importância do desenvolvimento de processos de aquisição, políticas e legislações como partes integrantes da fase gestão de projetos de paisagens urbanas e regionais são também considerados necessários para futuras estratégias de paisagem.

Os resultados preliminares indicam que a implementação bem-sucedida requer o desenvolvimento de uma visão para a paisagem e a compreensão dos conceitos de baixo carbono e qualidade espacial através do design, a fim de melhor se manifestar na infraestrutura e criar valor acrescentado para nossas cidades e regiões.

PALAVRAS CHAVES

Desenho da paisagem, espaço de vivência, baixo carbono, qualidade espacial, Adaptação climática

Abstract

This paper examines the potential of a holistic approach for urban and regional strategies in order to understand the way this might contribute more effectively to current global challenges. Part of a wider research strategy investigating the extent to which low carbon and spatial quality can be delivered at a regional level, it demonstrates benefits of adopting a range of processes to deliver integrated and sustainable urban development.

The case studies examined include the Landscape Observatory (Spain), the Room for the River (the Netherlands) and HS2/HS2LV (UK). The Landscape Observatory has raised public awareness of the value of landscape to the extent to which there is now a public law protecting landscape in Catalonia. An investigation of projects dealing with climate adaptation in the Netherlands demonstrates the potential and significance of introducing low carbon and the quality of space in urban and regional infrastructure projects. An examination of the HS2 high-speed rail project in the UK illustrates how it might be possible to impact on the perception and development of a singular engineering project in order to convey a wider sustainable vision and the impact that this might have on future landscape in towns, cities and rural areas. The significance of development of procurement processes, policies and legislations as part of the administration phase of urban and regional landscape schemes are also considered necessary for future landscape strategies.

Initial outcomes indicate that successful delivery requires the development of a landscape vision and the understanding of low carbon and spatial quality concepts through design in order to be better expressed in the infrastructure and create added value to our cities and regions.

KEYWORDS

landscape design, living space, low carbon, spatial quality, climate adaptation

Introduction

This research examines the way in which principles such as low carbon and spatial quality can be incorporated into strategic regional schemes to create a fully integrated sustainable development. Its purpose is to examine how concepts of sustainability, quality and low carbon can be expressed at a regional scale rather than simply at a detailed level of construction.

Three pioneering schemes have been selected as case studies, in Spain (the 'Landscape Observatory'), the Netherlands (the 'Room for the River') and the UK ('HS2/HS2LV') representing a range of projects to raise awareness of landscape and spatial quality (Catalonia) as way to implement spatial quality within a low carbon agenda on a major regional project (the Netherlands) and at the earliest stages of planning a major infrastructure (UK). Through the exploration of those three schemes the paper will examine ways of best practice and key ideas towards the establishment of a sustainable urban environment.

As Stephenson (2010) states, 'presenting landscape as 'space' has a long pedigree in assessment practice, but conveying its rich and messy place-values is still a rarity in practice'. That statement not only shows there is a connection between the landscape idea and the concepts of spatial quality and sustainability, but that there is also a lack of knowledge on the way these complex messages can be effectively conveyed and spatially delivered. As a result landscape is considered to be the 'space' where the sustainable activities take place, rather than the 'place' that will be created and be part of a sustainable strategic development. Also, the concepts of sustainability and low carbon are often considered only relevant to CO₂ emissions (Yuan et al., 2011) without considering the broader idea of sense of place and sustainable life style. Investigating the conceptual and design role in the above pioneer landscape projects the paper illustrates the potential of introducing low carbon and quality of space as a vital aspect of urban and regional landscape strategies.

Aim of the research

With the broader research focus to be on urban and regional landscape strategies the relation of such schemes to climate change, sustainability, low carbon and sense of place and their design integration is significant.

This paper aims to investigate the mechanisms supporting a sustainable landscape development as well as the extent to which low carbon and spatial quality can be delivered in urban and regional infrastructure projects.

Methodology

The paper focuses on the exploration of sustainable operations across the three landscape strategies



that have resulted in the delivery of pioneering urban and regional schemes. The Catalan, the Netherlands and the UK case studies are used to illustrate this venture.

The decision to include the Landscape Observatory of Catalonia (Spain) in this research is based on the fact that it works in a framework of sustainable development, increasing knowledge for the landscape and monitoring the landscape changes. It is a significant demonstration on how to 'sensitise' the Catalan society and the way this raises awareness on the development of the land and impacts on the territory. The Landscape Observatory of Catalonia is an advisory body on landscape issues for both the government of Catalonia and the Catalan society. Originally established to implement the European Landscape Convention (ELC), it has succeeded in bringing attention to the 'land' and create a landscape-oriented culture. The Observatory's main activities are; monitoring the evolution of the landscape, identifying ways that landscape awareness can be embedded in policy and legal documents and looking at a different way of spatial planning; the researcher will explore how it was established and the reasons why it has been so successful, changing views and minds regarding landscape.

Looking at how these ideas have been communicated to the society and how this affects the establishment of a sustainable landscape framework for the region, the research will move on to the next case studies. The Room for the River will illustrate the implementation of a low carbon and spatial quality agenda, while the HS2/HS2LV will examine the beginning of the planning process in a major strategic scheme. The 'Room for the River' is an excellent illustration of climate driven regional landscape design, implemented to address the problem of serious flooding due to increased rainfall and rising sea levels. It is a national programme, aiming to achieve high water level protection in 34 locations, now and in the future, across the Netherlands (Fig.1). A holistic approach on climate and sustainability issues put landscape at the core of development without minimizing the quality of life.

The significance of a landscape adaptation programme considering water safety, but also addressing spatial quality as well as the goals for long-term sustainability and the way that local and national institutions dealt with the implementation of a large-scale scheme have made it a suitable example for the purposes of this research. The 'Room for the River' programme extends across the whole country covering urban and rural locations, however for the purposes of this paper, a focus on urban projects has been given.





Figure 1: The 34 different landscape projects of the 'Room for the River' programme illustrated on a map (Source: Ruimte voor de rivier official organisation).

The HS2 & HS2 Landscape Vision (HS2LV) case study will explore how low carbon and spatial quality landscape strategies can raise the profile of the city and act as a catalyst for social and economic growth of the whole region. It will examine the early stages of planning a major development. HS2 is a planned high-speed railway (Fig.2) aiming to link London, Birmingham, East Midlands, Leeds, Sheffield and Manchester. It is currently the largest infrastructure project of the UK and it is believed to be a significant step towards Britain's economic development. HS2LV proposes to widen the conceptual and territorial scope of the high-speed line based on a sustainable landscape way of seeing. HS2LV aims to create propositions for a linear engineering project -such as HS2- and based on a holistic approach, to attract local, regional and national interest in order to build a landscape vision for the city and the region. This case study aims to seek contradictions between the plans for an isolated engineering project and the proposal for the establishment of a symbiotic relationship between the landscape, as a way to give value to the landscape. The role that drawing and design play in the way a message is conveyed in strategic schemes will be also presented throughout this study.



Figure 2: Plan for the phase 1 (London–Birmingham) and phase 2 (Birmingham–Manchester & Leeds) of HS2 route (Source: Department for Transport, [access online, July 2016]).

The main research body consists of visits to the case study location, offering the opportunity to work, observe and interview designers and experts from the programmes. The researcher was hosted by the three major schemes, for a period of one month at each location, examining the initial concepts of the projects and how ideas were developed throughout the implementation process.

The research methods adopted in order to find out how the concepts of sustainability and sense of place have been established and implemented consist of field visits, interviews, observations and drawing examination. During the field visits the researcher was able to observe, collect plans and maps of the locations, take pictures and interview key stakeholders. Face to face interviews with experts, project managers and technicians who were highly involved at the schemes were also conducted. The data collection is similar for the three case studies and consist of documents, maps, visual material, technical documents, case study notes, drawings, images, interview transcripts and recordings.

1. Findings & Discussion

The effects of climate change on our society and the landscape have become so obvious that is impossible to ignore the visual and spatial impact they have in strategic landscape schemes. Considering the global challenges we face such as food and water security, environmental uncertainty, globalisation, demand for transport, the economic situation, and the importance of the landscape experience, 'it is clear that we need

a new response to the delivery of large scale projects' (Nikologianni et al., 2014). Data collected during the three case studies will present the connection between the landscape experience and the understanding of place (Gandy, 2011) as well as mechanisms that have integrated such ideas in the landscape infrastructure.

Planning institutions or governmental departments often 'frame' the way urban landscape strategies are delivered by informing the project and control its implementation. This research argues that the development of a new mechanism, focusing on the conceptualisation and the actions shaping the project, has a potential impact on governmental values as well as the transformation of the project's delivery and outcome. Based on findings from all the three case studies, the impact that policies and political mechanisms have on the design and the implementation process of infrastructure schemes is critical and therefore the ability to develop a range of processes integrating social, environmental and economic elements through landscape design is vital.

1.1. Understanding the land

The input given by the Landscape Observatory regarding public and governmental involvement is considered significant as, through a series of catalogues, seminars, projects and public participation schemes that have been created by the Observatory, there is now a significant change in the delivery of urban and regional infrastructure, to such an extent that a public law protecting landscape has been established in Catalonia. One of the main instruments developed by the Landscape Observatory is the 'Landscape Catalogues'.

The Catalogues, based on a combination of visuals and text, are tools that aim to raise awareness for the landscape and its value for the city and the region. Being formed by a unique territorial analysis which had never been conducted before at such a scale and consistency, the Landscape Observatory has created seven Landscape Catalogues revealing 135 different landscape characters (Fig.3) within the region of Catalonia. This rare work aims to reveal the landscape elements and deal with physical, topographical characteristics as well as values, intangible elements and dynamics of the landscape, resulting not only in a better understanding of the land by the experts, but also as a way to disseminate these ideas to the public. The paper suggests that visuals, maps and drawings can reveal information that is less obvious when presented in lists or text. Therefore, the Landscape Observatory activities have allowed the designers, civil servants and the public to feel the character of the area, get a sense of direction, as well as 'discover' hidden valleys, areas of deprivation and natural characteristics.

Thus, the Catalan society has enhanced its understanding for the value of the landscape and the Catalan government is making use of these instruments for the creation of current and future sustainable developments and policies.

Els paisatges de Catalunya

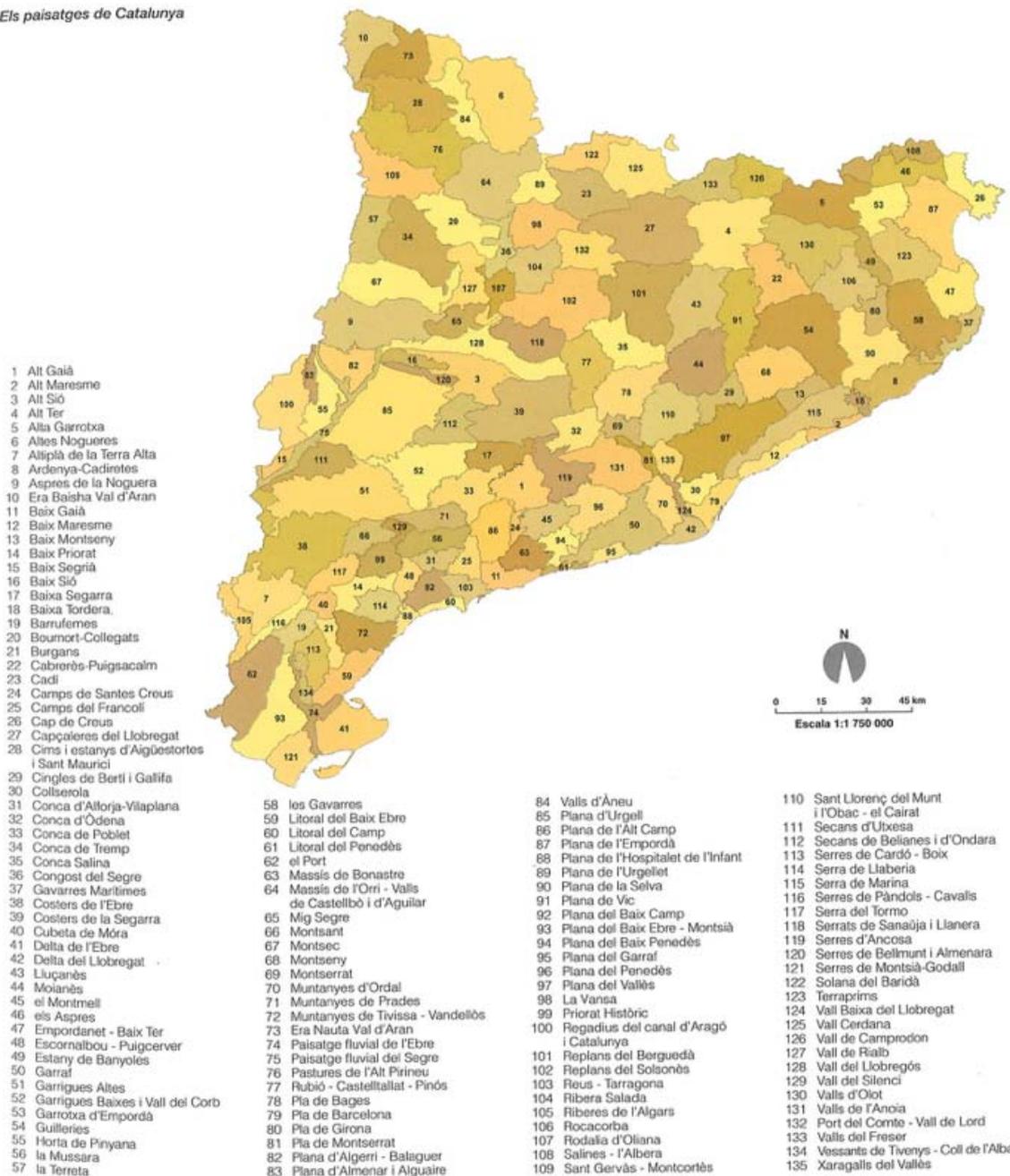


Figure 3: 'Els Paisatges de Catalunya'. An example of the 'Landscape Catalogues'. The 135 different landscape characters located on the map for the region of Catalonia by the Landscape Observatory (Source: Landscape Catalogue de l'Ebre, pp.29).

1.2. Creating a landscape vision

Both the Landscape Observatory, with the use of maps and 'Landscape Catalogues', and the Netherlands with various design processes, are pioneer projects involving landscape design on regional scale. However, it has been found that there are many cases where drawings end up being replaced by text, and pictorial forms by verbal ideas. It is important to highlight that the larger the scale the more difficult is for people to understand it and therefore for sustainable holistic schemes to be 'spatially' developed. Using findings from the three case

studies, this research argues that effective designs are important for the decisions made in the implementation of an urban or regional landscape strategy.

The creation of a narrative that blends the landscape and the city is a crucial element able to support the overall project and integrate sustainable, social and economic growth. Looking at the high-speed railway line programmes of HS2 and HS2LV, the creation of a vision, provided by HS2LV, has managed not only to secure sustainable development for the city, but to establish a future proposal for the whole region. While HS2 was focusing on the idea of a railway line that due to the existing structure and policy was going from the macro scale of the scheme right down to a very detailed level, HS2LV is proposing that a narrative, sense of place and a design concept for a sustainable place should be part of this initial framework. The creation of the diagrammatic drawing (Fig.4) presenting values of the land, environmental and social elements and a range of value judgements draws attention to particular areas of the major infrastructure. Using various 'general' or 'abstract' drawings like the one presented at figure 4, HS2LV has managed to give a series of exciting possibilities for the region, without micro managing specific spots and areas in the land. Using a less 'threatening' medium for the community has created a narrative and a vision for the landscape, engaging with communities and changing their perceptions.

HS2LV is considered an impactful for the governmental policy of the UK scheme, showing a different image of the region and integrating environmental and social ideas for the city of Birmingham and its surroundings through landscape design.



Figure 4: Drawing created to reveal the landscape identity and illustrate an iconic landscape for HS2LV proposal in the route between London-Birmingham (Source: Kathryn Moore personal archive).

1.3. The implementation of a narrative

Establishing a vision of a low carbon and quality landscape and communicate these ideas to the broader audience is not a simple task. However, this research agrees with Lutz (2008) in the notion that it is possible to describe an attractive and sustainable place and suggests that the most effective visions are conveyed through design. Examining the climate adaptation scheme of the Room for the River, this section shows how the concepts of low carbon and spatial quality can be integrated in a landscape design and what the key elements of successful implementation are. Findings show that the delivery of such complex concepts requires in-depth understanding and identification of the main ideas. As happened in the Room for the River programme (the Netherlands), the concepts of spatial quality and sustainability were interpreted as water safety, hydrological efficiency, environmental stability and sense of place. Based on a clear understanding of the main concepts and with continuous input from the designers and the public, the outcomes of this strategic development were tremendous.

Looking at the urban project between the oldest Dutch city, Nijmegen and the town of Lent, the dyke relocation that was developed by the scheme (Fig.5) has resulted in the creation of a peninsula and two new waterfronts for the city. This project is a perfect illustration of a sustainable urban scheme where the landscape is the context of the development embedding different low carbon and aesthetic elements in the design.

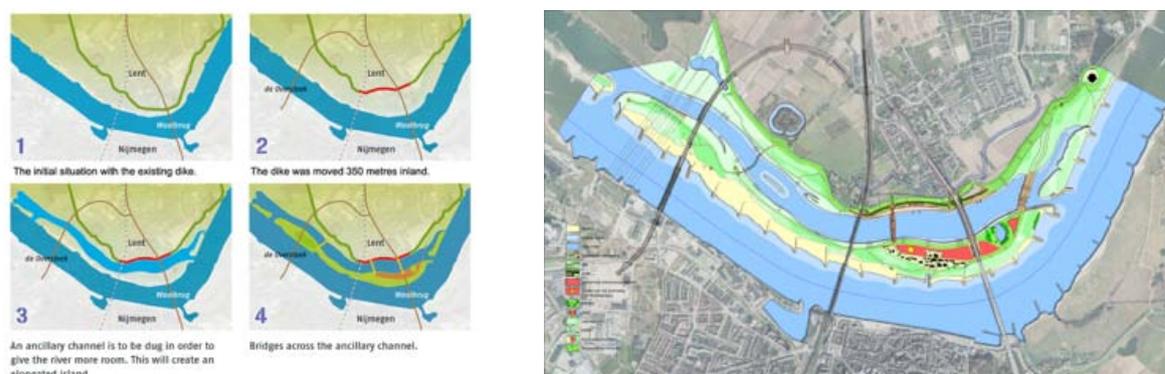


Figure 5: On the left, the dyke relocation in Lent and the creation of a new peninsula for the city of Nijmegen, one of the projects of the Room for the River Programme. On the right the final plan of the project (Source: city of Nijmegen).

Design and drawing have played a significant role in this outcome, as through them the 'intangible' concepts of sustainability and sense of place could be 'materialised' by the civil servants, management teams and the public. This has resulted in an in-depth understanding of the overall vision, and the better communication between the different project teams. As shown in Figure 6, the delivery of the Nijmegen - Room for the River scheme has enhanced the social, cultural, entrepreneurial and touristic value of the city and the region, without compromising the environmental and aesthetic assets. Visualisations such as the one below (Fig.6) are a significant help in the expression of the narrative, showing how a low carbon and environmental concept can also provide quality of space, walking, cycling, social and cultural activities without focusing only on the engineering and the technical delivery of the scheme. The outcomes of this research suggest that the

landscape project of Nijmegen is turning the 'necessity' of addressing water levels into an opportunity for enhancing spatial quality and sustainability.



Figure 6: Visualisation of the Nijmegen project, Room for the River, illustrating a low carbon vision of the city, where the concept of water safety has been integrated to a holistic landscape approach. (Source: city of Nijmegen).

Conclusions

Considering the landscape as the context for sustainable urban and regional developments this research has come to important conclusions. It is suggested that the successful delivery of a landscape strategy can be strengthened by the establishment of a holistic mechanism which integrates the landscape idea, the environmental and social assets as well as a vision for their implementation. The knowledge of the existing landscape is vital not only in order to meet technical challenges, but mainly because this will result in a truly sustainable and visionary plan for the future. The evidence of low carbon and spatial quality implications in strategic designs has revealed that such concepts are difficult to understand, although necessary to integrate in a landscape strategy.

Findings on the way drawing and visuals inform strategic design and planning, enforce the notion that good understanding of low carbon and quality concepts is crucial for the development of the design process and has significant consequences in the communication of the landscape narrative. Identifying the lack of articulation of the landscape concept in legislation and in guidance, the study highlights that policies and legislations are a way to enhance the principles of design, low carbon and spatial quality, and persuade politicians and civil servants to consider the vision and the outcomes of each landscape scheme from the very

beginning. In addition, the integration of a design-led approach in the project framework and certain policies will create a new way of thinking, revealing environmental, social and cultural characteristics that are not able to be illustrated during the existing infrastructure process. The ambition to embed a sustainable approach into urban and regional strategies will provide a strong conceptual basis for arts-led low carbon practice and will support a new way of thinking, integrating climate issues and global challenges in the landscape agenda.

Acknowledgements

The authors want to thank Climate-KIC, which has supported this research throughout, as well as all the participants at the Landscape Observatory, the Room for the River and the HS2/HS2LV strategic schemes.

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Appendix 17

V. Effective ways to deliver sustainability in urban and regional landscape strategies

Effective ways to deliver sustainability in urban and regional landscape strategies

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Abstract

This paper argues that, in order to deliver sustainable urban and regional landscapes, an integrated approach of individual elements such as legislations, design thinking and biodiversity needs to be considered. It forms part of a wider research project, examining the extent to which low carbon and sustainability can be delivered effectively in landscape strategies, which covers examples from the ‘Landscape Observatory’ (Spain), the ‘Room for the River’ and ‘New Dutch Waterline’ (Netherlands) and the ‘HS2LV’ project (UK). The Netherlands case study, presented in this paper, consisted by two large scale landscape projects is used to illustrate this approach. The ‘Room for the River’ and the ‘New Dutch Waterline’ are used to demonstrate how the idea of landscape, low carbon and design quality can shape the effective implementation of landscape strategies. Key elements and effective ways of delivering sustainable places have been identified through a series of real time visits, interviews and observations. The development of procurement processes, legislation, and understanding of the role of landscape sustainability and landscape quality as well as the importance of spatial representation of these ideas will be presented and discussed in order to illustrate a sustainable holistic approach and the tremendous impact that this has on the landscape and the region.

Keywords: landscape design, low carbon, spatial quality, aesthetics, climate adaptation, climate change

INTRODUCTION

This paper forms part of a wider research project investigating ways in which low carbon and spatial quality can be delivered in regional strategies. The aims of the broader research are to examine how the concepts of low carbon and spatial quality are used to regional design, the way such ideas can influence the decision makers and how they might impact up on the implementation of infrastructure. Three pioneer landscape projects in Spain (the ‘Landscape Observatory’), the Netherlands (the ‘Room for the River’ /‘New Dutch Waterline’) and the UK (‘HS2/HS2LV’) have been selected as case studies. This paper solely focuses on the implementation stage, examining the extent to which low carbon and sustainability can be effectively embedded in landscape strategies and how does this impact on the landscape and the region. The paper argues that low carbon and sustainability are broader concepts that relate to our way of life and not just technological or scientific artefacts. Arguing that it is their spatial dimension that is very difficult to be recognised, this research will present findings on how such ideas can be integrated in landscape projects. ‘Sustainability is today one of the most widely used words in the scientific field as a whole and in the environmental sciences in particular, but the analysis of the evolution of such a concept is a difficult exercise’ (Leal Filho, 2000). The latest literature argues that the concepts of low-carbon and sustainability have been widely advocated, however there is a lack of an in-depth examination and understanding of the similarities and the differences among them (Yuan et al., 2011) and therefore there is a variety for interpretations for low carbon development (Baeumler et al., 2012; Mulugetta and Urban, 2010). Recent literature has challenged the interpretation of low carbon and sustainable areas, questioning if this is based on activities, lifestyles and voluntary behaviour change or policy frameworks that are based on regulatory force (Feliciano and Prospero, 2011). There is much activity on examples focusing on sustainable technology placed in the landscape, but there is less written for a holistic approach. As a result landscape is considered to be the ‘space’ where the sustainable activities will take place, rather than the ‘place’ that will be created and be part of a sustainable regional development. Examining pioneer landscape projects, this paper illustrates the potential of introducing low carbon and quality of space as a vital aspect of regional landscape strategies.

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METHODOLOGY

The focus at this point is to investigate the operations and climate change aspects of the large landscape strategies that belong to the framework of sustainable development.

The 'Room for the River' is an excellent illustration of climate driven regional landscape design, implemented to address the problem of serious flooding now and in the future in the Netherlands due to increased rainfall and rising sea levels (Figure 1). It is a national programme, aiming to achieve high water level protection in 34 locations across the Netherlands, having a holistic approach about climate issues and sustainability that put landscape at the core of development without minimizing the quality of life. The uniqueness of a landscape adaptation programme looking into water safety, but also addressing spatial quality issues, the large scale that it was carried, the goals for long-term sustainability and the way that Dutch institutions dealt with its implementation, are considered pioneering in the current landscape and made it an ideal case study for the purposes of this research.

The 'New Dutch Waterline' is a national landscape programme consisted by approximately 60 different fortresses across the Netherlands (Figure 2). It was originally designed in the 19th century as a military defence system able to enable controlled inundation through sophisticated landscape engineering.



Figure 1. Map showing the location of the 34 different landscape projects of the 'Room for the River' programme (Source: Ruimte voor de rivier official organisation).

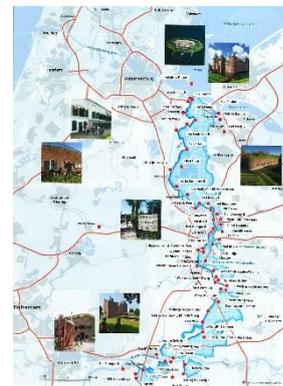


Figure 2. Map showing the locations of 'New Dutch Waterline' Programme (Source: Hollandse Waterlinie official organisation).

For a period of one month the researcher was hosted by the University of Delft and examined the landscape programmes of the 'Room for the River' and the 'New Dutch Waterline'. Investigation of the overall concept of the projects and the decision to implement landscape sustainability and spatial quality in such a large scale was the initial focus of the case study. The main research body consists of visits to the locations of specific landscape projects offering the opportunity to work, observe and interview designers and experts from both programmes.

The research methods used include field visits, interviews, observations and drawing examination in order to find out how the landscape ideas, low carbon and spatial quality concepts have been implemented. During the field visits at the landscape projects the researcher was able to observe, collect plans and maps of the area, take pictures and interview key stakeholders. Face to face interviews with experts, project managers and technicians who were highly involved at the schemes were conducted.

RESULTS AND DISCUSSION

Based on data collected during the field visits, interviews and observations, this research is arguing that there is a lack of clarity and high variability of the low carbon and sustainability terms in the landscape context, and therefore there is no clear understanding of their interpretation or spatial context. Findings emerging from the field visits and interviews show that these terms are ambiguous and amorphous and they are also very confusing to those who are not familiar or have not dealt with them before. However, examples of the pioneer projects investigated show that it is possible to deliver sustainable and quality landscape projects, the way this has been achieved and what it looks like.

The challenges with the concepts of low carbon and spatial quality might occur because of their variability between disciplines, landscape projects and countries. This research indicates that a major proportion of professionals believe that low carbon and sustainability for the landscape is only something that it has to do with Carbon. Either this is carbon neutral, low carbon, carbon cycle or materials, energy, CO₂ emissions, transport and more. Based on data collected on the question 'what do you understand is meant by the term low carbon in the landscape', the research shows that there is no unanimous agreement between the experts, neither does exist a common understanding about what is the spatial role of those ideas. Two notions were identified during the interviews. The first is aligning with the literature evidence by stating that low carbon has to do with a technological, scientific or numerical process while the second is exploring more holistic ideas that combine sustainability and quality of place. The collected data do not only urge the variability of these concepts between the different disciplines, but also among the level of expertise and the familiarity of the term in different countries.

This research suggests that when the concepts of low carbon and spatial quality are integrated and considered equally important to a landscape scheme, is much more likely to achieve a sustainable and quality space. It was relatively recent when Pickerill (2010), discussing about liveable cities and low impact development, argued that 'we need to look beyond technological innovation for solutions' in this area. And it is this point that aligns with our findings giving the opportunity to interpret low carbon and spatial quality in a much broader context. What has been found is that they often need to be analysed in different ways or with slightly different spatial characteristics that align with the project, the location and the culture. Interview data and case study observations suggest that a sophisticated process is required in cases of regional strategies in order to find ways of identifying the landscape quality and low carbon in a spatial context. What this research proposes is that we need to accept that the discussed concepts are complex and confusing, however extremely important for landscape design. During the Netherlands case study it was found that a specific meaning of low carbon and spatial quality was developed by the landscape strategy of the Room for the River. Climate adaptation and water levels are very much linked with low carbon and sustainability and they were the first goal of this programme, aiming to address water safety. It is indeed showing that one way to deal with such ideas is to interpret them for the specific location and the landscape project. There is no doubt that this interpretation should align with some of the main concepts and definitions that the terms belong to, but what is argued here is that the spatial dimension of such terms might change from location to location.

In addition, the New Dutch Waterline was aiming to address sustainability, in a different way to the Room for the River, by preserving and improving the existing land around the fortresses. Spatial quality was also a significant element in this scheme, but it was identified as an idea of preservation, cultural enlightenment, touristic opportunity and celebration of the historic legacy. Therefore the interpretation of the low carbon and spatial quality concepts were slightly different, aligning with a different vision. However, both schemes have resulted in successful sustainable landscape projects.

Make the vision clear

It is indeed a great challenge to make the vision of a low carbon and quality landscape clear and communicate these ideas to the broader audience. Case study findings and interviews have shown that even in cases where these concepts are identified for a specific landscape scheme it is difficult to make them visible and give them a 'tangible' or 'physical' substance. But this research agrees with Lutz (2008) who argues that 'it ought to be possible to describe what it is that makes a space attractive'. This paper suggests that the most effective visions are conveyed through design and drawing; and, therefore, design thinking is an important way to interpret how these complex concepts are spatially represented and what they 'look like' in the landscape. At one of the examples of the Room for the River, the urban project in Nijmegen and Lent, low carbon and sustainability were identified as water safety and environmental stability. However the dyke relocation that was developed by the scheme (Figure 3) was a great opportunity for the development of a peninsula and two new waterfronts for the city. The understanding and communication of the low carbon and landscape quality concepts among the different project teams resulted in a sustainable and aesthetic

place, with great social, cultural, touristic and economic value. Design and drawing played a great role in this successful outcome, as through them these intangible concepts could be better ‘seen’ and understood.

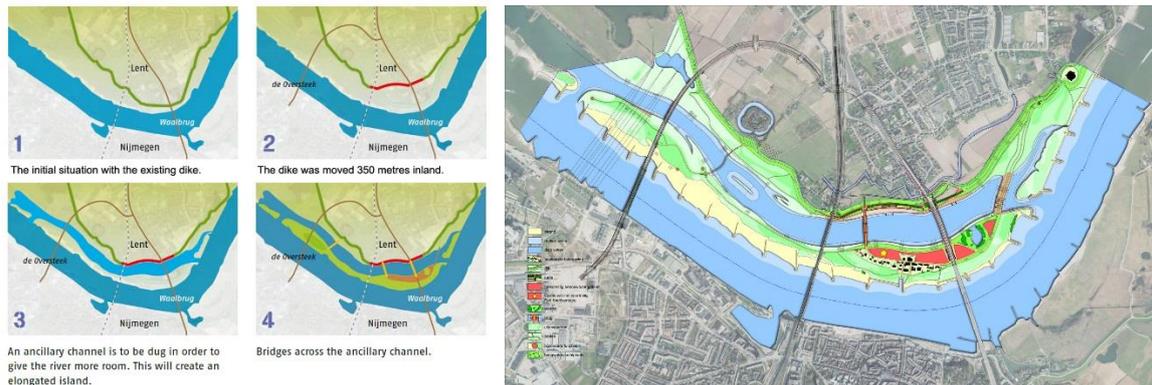


Figure 3: On the left, the dyke relocation in Lent and the creation of a new peninsula for the city of Nijmegen, one of the projects of the Room for the River Programme. On the right the final plan of the project (Source: city of Nijmegen).

Visualisations such as those presented here (Figure 4) are showing how a low carbon and environmental area can also provide quality of space, cycling, social activities and more. A different interpretation of sustainability and spatial quality has been given at the rural project of the Room for the River in Noordwaard. Noordwaard is an agricultural area that floods at various times. The project was aiming to celebrate nature and offer various activities to locals and visitors.

In the rural Noordwaard project dykes were relocated and specific inundation areas were created. Sustainability for this scheme is not expressed by avoiding the water, but by creating areas where it could find room, when at the same time highly environmental and quality spaces will be introduced. In a different way to the urban project of Nijmegen, the Noordwaard scheme is a rural location where nature should be preserved. Therefore quality elements such as materials, plants and observation areas were introduced in order to improve spatial quality and create an attractive place. The willow forest shown in Figure 5 belongs to the concept ‘Building with nature’ developed by the designing team of the project. It was especially designed as flood protection, but also gives the opportunity to build a lower height dyke in order to enhance aesthetics of place. The willow trees are planted in lines in such direction that reduce the waves the best possible way and they also belong to two different species in case one of them is affected and destroyed.



Figure 4: Visualisations of the Nijmegen project, Room for the River presenting a sustainable vision for the city (Source: city of Nijmegen).

Aiming at preservation of historical sites as well as the creation of new uses, the programme of the New Dutch Waterline has ‘redesigned’ and transformed a series of old fortresses into areas of cultural restoration, touristic sites, entertainment venues and natural areas. Having developed projects like the Bunker 599 and the Fort Werk aan’t Spoel (Figure 6), is giving the opportunity to locals and visitors to find out about national history, while the same time enjoying a sustainable and beautiful landscape.

CONCLUSIONS

Findings show that successful delivery requires the development of a vision and the understanding of the low carbon and spatial quality concepts through design in order to be implemented on the infrastructure. The establishment of a sophisticated process based on good understanding of the role of landscape is essential for the delivery of these concepts in urban and regional schemes. Data emerging from the pioneer projects show that the design vision should recognise sustainability and sense of place as intertwined ideas that need to be addressed in regional design. However, it is possible for them to be expressed visually in various ways creating different landscape areas.



Figure 5: The willow forest of Noordwaard Project, Room for the River. (Source: Robert de Konning, landscape architect of the scheme).

One of the key findings is that some of the most effective visions are often conveyed through drawings and therefore design is playing a major role in the delivery of such complex concepts. Strong communication, collaboration and continuous involvement of the designers have been proven essential and similar management processes are strongly suggested for strategic projects. The development of procurement processes, policies and legislations as part of the administration phase of regional landscape schemes are also considered necessary for future landscape strategies.



Figure 6: Designed by Atelier de Lyon and RAAAF the open 'Bunker 599' was aiming to make visible and accessible an important part of Dutch history (left). The Fort Werk aan't Spoel has been recreated to a unique area aiming for entertainment (right).

ACKNOWLEDGEMENTS

The authors want to thank Climate-KIC, for their support in this research, as well as all the participants at the Room for the River and the New Dutch Waterline schemes.

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Appendix 17

VI. Understanding landscape; the process to a quality and sustainable space



TASTING THE LANDSCAPE

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Understanding Landscape; the Process to a Quality and Sustainable Space

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Introduction

This paper argues that, in order to have quality and sustainable spaces in regional landscapes, a landscape perspective needs to be 'absorbed into all the decision making institutions and organisations responsible for policy, strategic or regional planning at a national or international level' (Moore, 2010). According to Liang (2010) the low carbon concept can be used to 'enrich theories and practices', stimulating the process of low-carbonising regions. Two case studies are used to illustrate the potential of this approach. The example of the Landscape Observatory in Catalonia demonstrates the idea of landscape and the impact it has had on the landscape and the region. The Netherlands case study examined two national programmes, the Room for the River and the Dutch Waterline to demonstrate how the idea of landscape, low carbon and design quality can shape the implementation of landscape strategies.

The Landscape Observatory

The Landscape Observatory, established to help implement the European Landscape Convention (ELC) in Catalonia, has succeeded in bringing attention to the landscape and create a landscape oriented culture by using regionally based catalogues to identify landscape quality measures, criteria and goals (Visentin, 2013) moving away from earlier simple landscape character assessments towards representing intangible elements about landscape and its value as a cultural as well as physical resource. In addition, to introduce landscape objectives into spatial planning, a series of landscape charters (voluntary instruments aimed at promoting actions and strategies for landscape assessment and improvement), the Landscape Observatory has managed to integrate the concept and principles of ELC to such an extent that there is now a public law protecting landscape.

One of the key conclusions of this case study is that it is the emphasis on landscape quality and the impact that this has, not only as an environmental aspect, but also on the quality of life and the cultural and heritage strength of the area, that has successfully changed perceptions and institutional habits. Landscape is now recognised as being an integral, active and fundamental factor affecting the quality of people's lives.

The Netherlands

The Room for the River is a landscape adaptation programme addressing a high-risk climate issue such as flooding, while the Dutch Waterline aims to preserve the existing landscape and historical infrastructure. The extent to which 'spatial quality' is integrated to the projects can be understood by the comment by Jan Van der Grift (senior advisor for spatial quality for the Room for the River) who states that 'Spatial Quality is not important, it is essential', explaining that the emphasis on landscape quality was given prominence in these programmes, through its incorporation in public law. The Room for the River was the first project in the Netherlands to address water safety and spatial quality, thereby securing environmental and aesthetic elements from initial plans right through to the implementation phase.

Both of these infrastructure projects have had a tremendous impact on the region, by both empowering local communities and ensuring that landscape identity and culture as part of local transformation.

Conclusion

At this point the paper concludes with key lessons learned to establish this approach at an institutional, national and governmental level. Each case study focuses on how to deliver a quality and sustainable landscape.

The Landscape Observatory deals with spatial quality and sustainability in a conceptual level by integrating them to landscape planning and policies. The development of tools such as the Landscape catalogues and charters has strengthened landscape legislations and established a relationship with local and national administration. The production of educational material as well as being featured in local press has enhanced community liaison to landscape related issues.

The Room for the River and Dutch Waterline programmes illustrate ways that these landscape ideas can be interpreted to reality in a way that results to an aesthetic and valuable product. The development of procurement processes was one of the key elements to secure spatial quality and sustainability across the projects. Significant presence on media and webpages has increased the public interest and has promoted the social aspect of these landscape strategies.



Appendix 17

X. Identifying spatial quality in climate adaptation landscape projects

Identifying Spatial Quality in Climate Adaptation Landscape Projects

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The project in Lent will provide additional room for the river 'Waal' by relocating the dike and creating a new flood plain. This is a high flood risk area in Lent for which the Waal. A part of the old dike has been redesigned as an island opposite the historical source of Sint-Jansdal. The island offers significant opportunities for leisure, outdoor sports and a 'dumper' for local people who can experience the dynamics of the river.

The Room for the River Programme has 30 different projects across the Netherlands.

Introduction

Part of a broader PhD research to examine how a more holistic approach to landscape may significantly contribute to the global challenges by re-establishing landscape at the forefront of development and as the context within which the development processes take place, this poster presents the extent to which low carbon and spatial quality can be delivered in regional infrastructure projects.

Methodology

Three complementary case studies were conducted, the first being the 'Landscape Observatory' (Spain), the second titled the 'Room for the River Programme' (Netherlands) and the third called 'the HS2LV project' (UK). The Room for the River programme shows how spatial quality and low carbon are embedded in its ethos resulting in an adaptation method that addresses a climate problem and also enhances the region.

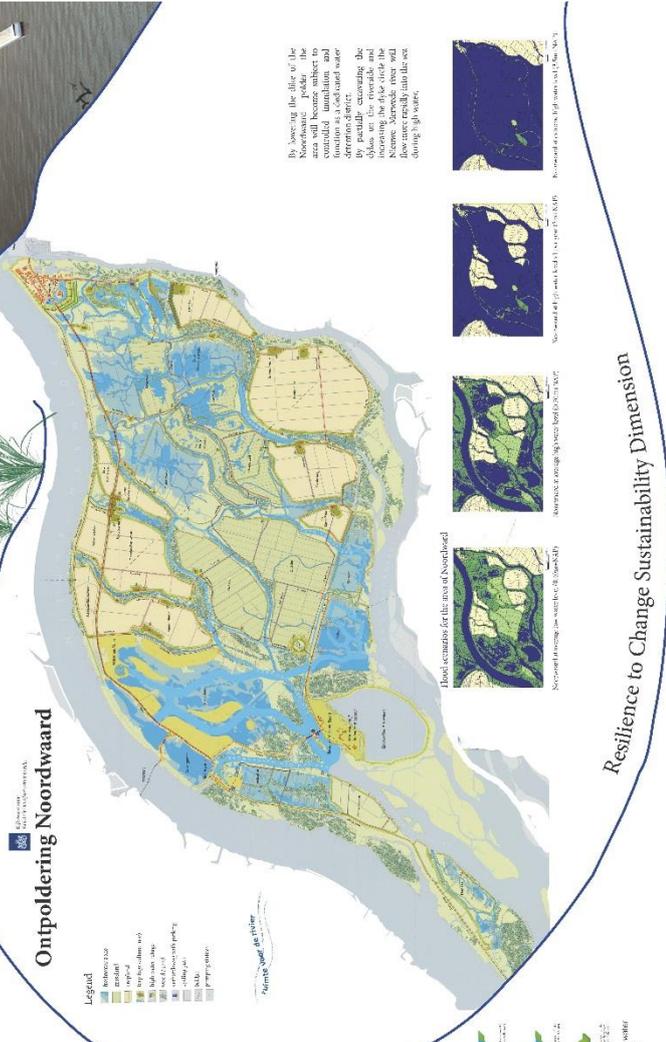
Findings

The Room for the River showcased here is a landscape adaptation programme addressing a high-risk climate issue such as annual flooding. The emphasis on landscape quality was given from the very beginning by incorporating its inclusion by public law. In fact the Room for the River was the first ever project in the Netherlands to address Water Safety and Spatial Quality in such a way where, environmental and aesthetic elements are secured from the conceptual to the implementation phase.

Conclusion

This case study focuses on how to deliver a quality sustainable landscape. It illustrates ways that the landscape ideas can be interpreted to reality in a way that results to a aesthetic and valuable product.

The drawings have been prepared by the project team and have been created by the researchers.



By lowering the floor level of the Noordwaard polder the area will become subject to controlled inundation and will be used as a water retention district. This is possible by partially encircling the Noordwaard river with the dike and increasing the dike strike the Noordwaard river will be able to store water during high water.



Resilience to Change Sustainability Dimension

The drawings have been prepared by the project team and have been created by the researchers.

Appendix 17

XII. Low carbon as a critical element in landscape regional infrastructure

Low carbon as a critical element in landscape regional infrastructure

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Introduction

The research discussed here aims to establish a new way of conceptualizing and delivering infrastructure projects, to discuss the need of a holistic approach into the concept of sustainable infrastructure and the importance of the visualizations during the design process. Looking at the idea of the sustainable low carbon vision for new settlements, this study explores garden cities design, in order to investigate what does this mean, and how it looks like.



Stoke Harbour Garden City, Hoo Peninsula, Medway, Kent Shelter & PRP



Green Analysis, Stoke Harbour



Green Strategy, Stoke Harbour

The research core is the recently submitted at Wolfson prize Garden cities plans, where some of the winning projects are presented, analysed and discussed in a way that investigates how words are interpreted to drawing and how low carbon element impacts on the master plan.



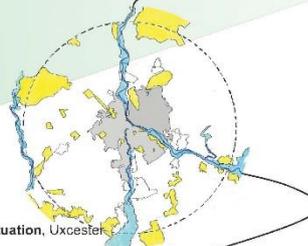
Water Strategy, Stoke Harbour



Housing Strategy, Stoke Harbour

Methodology

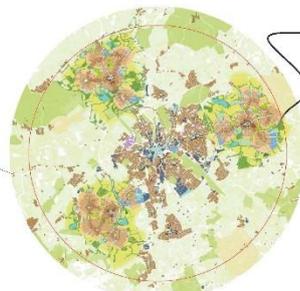
In depth **analysis** of final or ongoing project **masterplans** will try to unpack all the information related with spatial quality, low carbon and design process. Following the investigation of pictorial forms, in depth **interviews** with designers and an **exhibition** will explore how the main ideas are being communicated through the projects and where the sustainable/low carbon form has or could have been achieved. The aim is to investigate how different interpretation of elements such as spatial quality, aesthetics, and low carbon are evident into the plans and what they look like at a regional scale.



Current Situation, Uxchester



Green Strategy, Uxchester



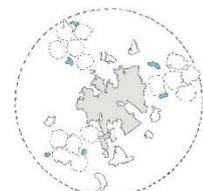
Uxchester Garden City, Fictional Site
Urbed

Aims

- Evaluate the role and nature of low carbon and aesthetics in regional landscape based spatial strategies
- Identify whether sustainability is able to perform visually in a wider spatial scale
- What is the role of drawing
- What is the impact of low carbon and spatial quality on the masterplan



Housing Strategy, Uxchester



Water Strategy, Uxchester

