Investigation of the “BREEAM Communities” tool with respect to urban design

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Degree Project in Environmental Strategies, Second Cycle
INVESTIGATION OF THE “BREEAM COMMUNITIES” TOOL WITH RESPECT TO URBAN DESIGN
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Dedicated to Lefteris
and my parents
Abstract

Urbanisation is an increasing phenomenon especially over the last years, which is of major concern due to the damage that can cause on environmental components such as climate, biosphere, land and water resources. A prevalent way to control this damage and mitigate the negative impacts of urban areas, lately, is considered the use of international tools like BREEAM Communities. BREEAM Communities is a third party assessment and certification standard that assesses, rates and certifies international processes, addressing environmental, social and economic sustainability objectives that can have an impact on large-scale development projects. A prevailing aspect of an urban development process is the urban design part which demands a lot of effort during the whole process. This study, focuses on how BREEAM Communities incorporates and influences the urban design of a large-scale development. By analysis of case studies regarding development projects in Sweden that either used BREEAM Communities or rejected it, qualitative interviews with relevant actors and quantitative analysis of the tool with charts and diagrams, the benefits and the drawbacks of the tool in relation to urban design are being explored. The main methods used for collecting and analysing the data are a theoretical approach, case studies analysis and interviews. Based on the overall qualitative and quantitative results of this study, the tool proved to be urban design sensitive since it includes a wide range of issues related to urban design and in particular, it has the potential to provide inspiration and support to the urban design team from an early stage throughout the process. Finally, a set of certain guidelines for architects and urban designers were prepared in order to optimise their job by setting priorities and to make their work more time and cost efficient.

Keywords: BREEAM Communities, urban design, process tool, assessment, community, district, case study, planning stages, interviews
Abstrakt

Urbanisering har ökat kraftigt de senaste åren, vilket gör urbaniseringens negativa effekter på miljömässiga beståndsdelar som klimat, biosfär samt mark- och vattenresurser angelägna att utreda. Ett sätt att kontrollera och motverka de negativa miljöeffekterna från städer har varit genom att använda internationella verktyg som BREEAM Communities. BREEAM Communities är en tredjeparts utvärderings- och certifieringsverktyg vilket utvärderar, klassificerar och certifierar internationella processer genom att värdera miljömässigt, socialt och ekonomiskt hållbara mål vilka kan påverka storskaliga utvecklingsprojekt. En stor beståndsdel i ett stadsutvecklingsprojekt är designdelen, vilken kräver mycket fokus under hela processen. Den här uppsatsen fokuserar på hur BREEAM Communities involverar och influerar stadsutvecklingen i ett storskaligt projekt. Genom att analysera utvecklingsprojekt i Sverige som antingen använder BREEAM Communities eller förkastade detta, genom kvalitativa intervjuer med relevanta aktörer och kvantitativa analyser av verktygen genom tabeller och diagram har fördelar och nackdelar med verktygen i relation till stadsutveckling och design utforskas. En teoretisk ansats har använts som huvudmetod för att samlar in relevant data. Baserat på de kvalitativa och kvantitativa resultaten framträdde ett resultat som visar att verktygen var användbara vid stadsutveckling eftersom de inkluderar en lång rad olika frågor och har potential att tillhandahålla inspiration och support för stadsutvecklingsteamet redan från ett tidigt stadie i processen. Dessutom var en del hjälpmedel förberedda för arkitekter och urbana designers för att optimera deras arbete genom att sätta upp en prioriteringslista och genom att göra deras arbete mer tids- och kostnadseffektivt.

Nyckelord: BREEAM Communities, stadsplanering, processverktyg, utvärderings, gemenskap, Distrikt, fallstudie, Planeringsstadiet, intervjuer
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Chapter 1

Introduction

Context and Problem Formulation

Aim

Research Questions
1 Introduction

1.1 Context and Problem Formulation

The last years the number of population living in urban areas is high and continues to increase rapidly. Hence, urbanisation is a phenomenon of major concern due to the damage that can cause on the environment (Haapio, 2012). A prevalent way to control this damage and mitigate the negative impacts of urban areas is the use of certain process tools like BREEAM Communities, LEED for Neighbourhood Development and CASBEE for Urban Development etc. Due to the fact that the demand for the process tools for certification and assessment of buildings has been increased and assessment of separate buildings or buildings components is not enough (Haapio, 2012), a combination of assessments regarding all the components of an urban area like the neighbourhoods, public transportations, services and built environment must be done under the use of one solid process tool.

Therefore, although rating tools for the sustainability assessment of buildings exist for more than two decades, it proves that the focus and attention to green buildings is insufficient to guarantee the sustainability of the built environment (Berardi, 2013). Notwithstanding, it is the urban areas that are “the lowest level where problems can be meaningfully resolved in an integrated, holistic and sustainable way” (Aalborg Charter, 1994 in Berardi, 2013). The fact that the focus is shifting from single buildings to larger developments leads to an increase in the number of communities using sustainability assessment especially in the developed world since the turn of the 21st century (Sharifi & Murayama, 2013).

So, in order to develop a sustainable community, the design and planning of all its components is equal important. Therefore, an overarching strategic framework is needed to be used as a guide for sustainable urban development since the challenges of sustainability issues at the urban scale are more complex and broad-ranging than at the building scale (Kyrkou and Karthaus, 2011). Hence, various methods and techniques have emerged concerning urban sustainability, seeking to find out how cities can become more sustainable (Rosales, 2011).

However, when it comes to the use of these process tools, opinions vary regarding their validity and their contribution. For instance, there are certified sustainable communities-city districts by this kind of tools and on the other hand there are great examples of city districts that are called “sustainable” without being certified by international tools. In that case various questions arise in the design and planning community: “What is the additional contribution and the benefits that provides the use of a certification tool for communities?” “Is it worth to make use of certification tools that structure the process for the development of sustainable districts like BREEAM Communities, LEED for Neighborhood Development etc. in all cases regarding urban design and planning?”

Moreover, there are also contrasting beliefs regarding the main reasons for the use of these tools. It is obvious that the application of these process tools enables the comparison between communities and urban areas, enhancing also the decision making processes (Kyrkou and Karthaus, 2011); also there is the belief that the use of sustainable indicators early in the urban planning process would help advance the integration of sustainability goals during the process which will eventually lead into sustainable cities by design (Rosales, 2011). Furthermore, the interest towards certification systems from the authorities, global investors and property developers, is increasing as well as it could be considered that authorities, city planners, designers etc. would benefit from the use of these tools during the decision making process (Haapio, 2012). Based on this fact, according to numerous studies, there is the also the perspective that “it is all about marketing”. In that case the “green certification” acts as an advertisement for a company for example, which follows a template of a “predetermined checklist” (Kyrkou and Karthaus, 2011). This leads to the question “So, why to certify urban areas? Because of the interest in sustainable buildings and urban development or to be benefited out of the certification?”

Although these thoughts are worrying, there is an increasing number of process tools that are used and updated during the last years that prove through a number of case studies that their use can enhance a more sustainable performance of urban development (Haapio, 2012). Between them, BREEAM Communities is a standard that was developed to find sustainable ways of addressing 21st century challenges – urbanisation, climate change etc.- and it covers economic, social and environmental sustainability, assessing all the components of a community (Architects, 2012). A large number of case studies starting from UK and expanding to other European countries like Sweden, Germany, Netherlands, Norway, validates the importance of the use of these process tools (Haapio, 2012). For instance, to date 8 projects have been certified under BREEAM Communities.
with a further 18 currently registered and undergoing assessment, with the size of development ranging from 2ha to 179ha and there are currently 66 licenced BREEAM assessors in 13 countries (BRE Global, 2014a).

Hence, taking into consideration the above parameters, an overarching problem regarding the use of the assessment tools is to appraise the added value from using them or not during the urban design process regarding their substantial contribution to the development of sustainable communities.

1.2 Aim

This thesis project aims to build knowledge regarding the use of BREEAM Communities as a tool that indicates a process for the design of sustainable communities, investigate its influence to the development with respect to urban design and identify benefits and drawbacks emanating from its use.

For this aim, it will be crucial to examine different cases of communities that are designed with and without the use of BREEAM Communities assessment tool. Through this examination, it is expected to gather vital information regarding the role of BREEAM Communities tool, its contribution and its influence in urban design.

This will be done through an analysis of how the use of BREEAM Communities tool in the different case studies affects the final result or influence the design process and the outcome. Hence, this will be investigated through three case studies in Sweden: Masthusen, Malmö (use of BREEAM Communities from the beginning), Kabeln, Sundbyberg (under development, use of BREEAM Communities from the beginning), Royal Seaport, Stockholm (no use of BREEAM Communities).

1.3 Research Questions

In order to examine in depth the benefits and the drawbacks emanating from the use of BREEAM Communities with respect to urban design, it is important to study different cases under the same research questions. The research questions are formed in a way to cover the study in a wider range regarding the use of BREEAM Communities, starting from its characteristics and its criteria, its benefits and its drawbacks and then its influence on urban design.

However, the main focus of the study will be to examine the influence of BREEAM Communities on urban design, therefore this will also be the overarching research question that will lead the research process. During this research though, will be identified advantages and disadvantages emanating from the use of BREEAM Communities that will be analysed and explained in relation to the overarching research question.

The research questions are formulated as follows:

*How is urban design affected by the use of BREEAM Communities?*

More specifically, what are the differences in urban design process and outcome between the communities that were designed and developed based on BREEAM Communities standards and the communities developed without this tool but that are characterised “sustainable”.

*How BREEAM Communities has incorporated urban design?*

BREEAM Communities as a scheme is structured through a long checklist that includes categories and criteria that should be considered during the whole process for the development of a sustainable community. In order to gain an understanding on how BREEAM Communities deals with the urban design aspect is important to identify the urban design related criteria and their value compared to other criteria.

*What are the benefits and the drawbacks for urban design emanating from the use of BREEAM Communities?*
In that case in order to define the benefits and the drawbacks it would be helpful first to investigate how different actors such as authorities, architects, designers, planners, developers etc. evaluate the contribution of the BREEAM Communities in the development of new communities.

2 Theory

To comply with the aim, the thesis project will be based on a theoretical approach which is focused on relevant theories, terms and ideas. The proposed thesis explores the benefits and the drawbacks emanating from the use of BREEAM Communities in the urban design and also how the urban design can be affected from the use of this assessment tool. Hence, a study of planning and design theories referring to urban areas and theories relevant to sustainability issues, collaborative planning and urbanism, is the main source for collecting qualitative data for this research study.

Urbanism and urban planning and design -urban, city, and town planning- are important areas of research for which there is a number for relevant theories that must be studied since they have great potential for explaining the technical and political process concerned with the use of land and design of the urban environment, including transportation networks, to guide and ensure the orderly development of settlements and communities. Historians, like for instance Kostof & Castillo (1999) and Hall (2002) in their works follow the evolution of city components like streets, public places, urban divisions and the frontiers of city and countryside, to modern times and moreover, they provided a critical history of planning in both theory and practice. The study of these theories can provide a basis in order to understand what affects the comprehensive redevelopment of the cities and communities and which are the needs of modern cities and communities regarding all their components.

Furthermore, the concept of sustainability is starting to have an important influence on planning and policy at the local level as well. Sustainability has become a goal in comprehensive plans and other planning activities that is eventually adopted by a certain number of communities (Maclaren 1993, Oullet 1993, Beatley 1995). Though, according to Maclaren (1996), the important next step for sustainability initiatives at the local level is to determine whether or not these actions are leading a community to become more sustainable and a significant barrier to accomplish this is the absence of an articulated method of reporting on urban sustainability.

Nowadays, the terms “urban sustainability” and “sustainable urban development” have become the new trends when it comes to city, community, neighbourhood, urban planning and design etc. Therefore, the tools that have been developed in order to assess how sustainable a community is or how a community can be planned and developed to be so, make use of these terms also in order to address issues like intergenerational equity, intragenerational equity (including social equity, geographical equity, and equity in governance), protection of the natural environment (and living within its carrying capacity), minimal use of non-renewable resources, economic vitality and diversity, community self-reliance, individual well-being and satisfaction of basic human needs (Maclaren, 1996), which are some of the key characteristics of urban sustainability referred to policy documents as well. In that point it would be good to make a distinction between the two terms “urban sustainability” and “sustainable urban development” which are very close and slightly different. “Sustainability can be described as a desirable state or set of conditions that persists over time while the word development implies a process by which sustainability can be attained” (Maclaren, 1996). Therefore, when referring to these tools, that are designed to structure a process that will lead to the design of a sustainable community, it is right to say that these process tools work towards “sustainable urban development” projects.

Moreover, Green Urbanism and Sustainable Urbanism are two of the most important discourses that must be studied in order to acquire an in depth understanding of the main research problems, such as what constitutes a sustainable community, or which are the design principles for developing a community to be sustainable and what processes and steps should be followed during the design and planning phases. These discourses explore how to create communities beneficial to human and environment. Beatley (2000) presents green urbanism as an attempt to shape more sustainable communities and lifestyles which, as a process, demands the collaboration of landscape architects, urban planners, ecologists, transport planners, psychologists, economists and other specialists in addition to architects and urban designers. Among others, Riddell (2001), Leitmann (1999), Wheeler (2013) and Haas (2012) are important theorists because of their contribution in urban planning and design field, that should be studied in order to understand the major challenges, including social and economic, wasteful consumption of resources, transportation congestion and environmental degradation during the planning and the development of modern communities. For instance, Wheeler (2013) in his
work ‘Planning for Sustainability: Creating Livable, Equitable and Ecological Communities’ explores and presents a wide-ranging, intellectually well-grounded and accessible introduction to the concept of planning for more sustainable and livable communities. The text explores topics such as how more compact and walkable cities and towns might be created, how local ecosystems can be restored, how social inequalities might be reduced, how greenhouse gas emissions might be lowered, and how more sustainable forms of economic development can be brought about. Wheeler’s perspective is that much positive change is happening every day and in terms of planning he proposed the we can all become more aware of the economic, social and physical landscapes around us in order to understand the problems and become more proactive in identifying priorities and opportunities for positive change; he also supports that by observing carefully the environment around us we can come up with practices that will enhance neighbourhood revitalization and ecological restoration and he concludes by stating that we need more systematic approaches to environmental regulation and protection for different planning scales, like establishing design review commissions, zoning reforms and other tools that can be used to nudge urban planning in the direction of sustainability. Furthermore, Haas (2012) poses to his work ‘Sustainable Urbanism and Beyond’ urgent questions like: How will our cities survive? How can we combat and reconcile urban growth with sustainable use of resources for future generations to thrive? Where and how urbanism comes into the picture and what “sustainable” urban forms can do in light of these events? Through the collection of various essays that Haas gathered for his book, from an array of disciplines including architecture, urban planning, urban design etc. are brought into light modes of thinking that are consistent with the multidimensional complexity of our cities, in order to think and adopt new tools that will help us to rethink our cities for the future and also see how the evolution of urbanism can influence our everyday life patterns and our cities, communities and neighbourhoods.

Aiming to give answers to the main research questions is important to study these theories where are analysed the environmental impacts of urban development and are presented ways of how to make cities self-sufficient and sustainable.

Moreover, regarding the empirical part of the study, the case studies, will not only be used as a practical tool but also in a theoretical way that will be the tool for theoretical interpretation of the study. Hence, case study is a term that should be defined in a theoretical base as well. Many theorists, except for Groat & Wang (2002) that are referred above, like Ragin & Becker (1992) and Stake (1995), work on the theoretical part and interpretation of a case, that is presented and analysed in a following chapter, such as how it can be used as a
Chapter 3

Tracing the Planning System in Sweden
3 Tracing the Planning System in Sweden

This chapter will provide some supplementary information referring to the Swedish planning system in order to bring up and explain some terms and definitions that will appear in the text and make it easier for the reader to follow and understand the description of the planning processes, having a basic idea of the steps demanded from the Swedish law and regulation.

Back in the history, the low standards of hygiene and the fire hazards in the towns and the cities that were noticed in Sweden, led to an urgent need to deal with these problems through legislation and laws. This decision led to the Building Decree – byggnadsstadgan- of 1874 that was the first modern building legislation in Sweden (BSR INTERREG III B, n.d.; Hedström & Lundström, 2013). According to the Building Decree of 1874, the towns drew up and implemented urban plans and moreover, it was demanded to have building orders and building committees (BSR INTERREG III B, n.d.).

However, the Building Decree was a royal ordinance and did not have status of civil law and as a result the property owners were not forced to follow the town plans and consequently the development of the town wasn’t always a harmonious procedure. Hence, in 1909 it was formed the Town Planning Act – stadsplanelagen- that established legal relations between municipalities and property owners. Then, in 1931, the Town Planning Act was reformed including further legally binding regulations for the differentiation of use of both building blocks as well as streets and land for public spaces (BSR INTERREG III B, n.d.).

One of the most important weaknesses of the reformed Town Planning Act was that the exploitation of land for settlements was free and as a result there was an irregular expansion of the city with settlements grew in areas that could not be supplied with roads, water or sewage treatment. Therefore, in 1947 the Government proposed the new Building Act and Building Decree based on the planning and land policy that had been published in the United Kingdom (BSR INTERREG III B, n.d.).

The Planning and Building Act of 1987 removed the compulsory state-level examination and the state can only act against a municipal planning decision if the decision contravenes specific national interests defined in laws, if it jeopardises the interests of neighbouring municipalities or puts a danger to health and safety (BSR INTERREG III B, n.d.). The municipalities had to draw up a Municipal comprehensive plan – översiktsplan- which works as contract between the state and the municipality on the treatment of the national interests (Hedström & Lundström, 2013). The Planning and Building Act needs to keep up with the recent and expected incremental changes that lead to amendments to the Swedish planning system and as a result it is updated regularly (Hedström & Lundström, 2013).

The Planning and Building Act, as it is referred above, requires every municipality to have an up-to-date comprehensive plan covering the whole municipality and arranging the course for the long-term development of the physical environment (Regeringskansliet, 2012). One of the main features of the Planning and Building Act is to indicate the right use of land, the development and use of the built environment and how environmental quality standards will be followed (Regeringskansliet, 2012). Moreover, there is a number of points at which Planning and Building Act refers to Environmental Code – miljöbalken, which was established in 1999, to prevent for instance activities that are environmentally undesirable, or concern national interests (BSR INTERREG III B, n.d.; Hedström & Lundström, 2013). The Environmental Code contains provisions on the management of land and water areas, taking into consideration provisions on areas that are of national interest for various purposes (Regeringskansliet, 2012). In addition, it contains provisions regarding environmental quality norms, environmental impact statements and the protection of areas like nature reserves, shore protections areas etc. (Regeringskansliet, 2012; Hedström & Lundström, 2013).

Developers who intend to pursue a project in Sweden, apart from the permit application, need to consult the county administrative board at an early stage and furthermore, the developers should consult private individuals who are likely to be affected in good time (Milieu_Environmental Law & Policy, 2007). After the consultation procedure, the county administrative board will decide if the project is likely to have a significant...

Moreover, the county administrative board (Länsstyrelsen), the Environmental Court and the Ministry of Environment are the main institutions in Sweden responsible for the supervision of proper implementation of Environmental Impact Assessment procedures (EIA) in cases concerning large-scale projects (Milieu_Environmental Law & Policy, 2007). In Sweden, the EIA Directive has been mainly implemented by the Swedish Environmental Code (Milieu_Environmental Law & Policy, 2007).

Finally, another relevant issue regarding the Swedish system, is the establishment of Sweden’s Environmental Quality Objectives (EQOs) which is an environmental policy that aims to hand on to the next generation a society in which the major environmental problems have been solved (Government offices of Sweden, 2013). There are sixteen objectives (see Appendix p. 74) within which the objective “A Good Built Environment” which indicates that “cities, towns and other built-up areas must provide a good, healthy living environment and contribute to a good regional and global environment [...] buildings and amenities must be located and designed in accordance with sound environmental principles and in such a way as to promote sustainable management of land, water and other resources” (Naturvårdsverket, 2008). Therefore, each municipality, share this responsibility of taking care and protect the environment with many ways and typically has an environmental program with objectives that are relevant to sustainable urban development.

To summarize the above and have an overview of the planning system in Sweden, here are the basic principles (see Fig. 3.0.1): the municipalities are the responsible ones for land-use planning; a municipal planning monopoly exists and all municipalities are obliged to have a current comprehensive plan that forms the basis of decisions on the use of land and water areas. Moreover, Environmental Impact Assessments (EIA) constitute an important instrument in municipal planning, which is compulsory in several contexts and have to be part of the basis for the detailed development plans (BSR INTERREG III B, n.d.). The main aim of the comprehensive plans in Sweden regarding the development of land with people on focus is to “promote societal progress towards equal, good and lasting sustainable environment for the benefit of people of today’s society as well as of future generations” (BSR INTERREG III B, n.d.).

Finally, the Detailed Development plan is the implementation instrument of the municipality and it sets an implementation period of a minimum of 5 years and a maximum of 15 years. The Detailed development plan defines which areas are to be used for buildings and other installations such as trade, sport, traffic, protected areas etc. and also other prerequisites like for instance, the permitted building height, colours and materials and indicates public places for streets, parks, squares etc.

Last but not least, regarding the planning process, is the consultation part. It involves property owners, local companies, residents, special interest organisations, those responsible for social services in the affected area etc. Before the municipal council makes a decision on the comprehensive plan, it has to be reviewed by the public during a minimum of two months and before the municipality makes a decision on the detailed development plan it has to be reviewed by the public during a minimum of three weeks. Regarding the detailed development plan, the residents have the right to study the environmental impact statement that has to be produced (BSR INTERREG III B, n.d.). Moreover, the residents in the community can use sustainability reports to educate themselves about sustainability trends and evaluate how their own actions may improve sustainability (Maclaren, 1996).
Chapter 4

Methodological Framework

Theoretical Approach

Case Study Methodology

Interviews Methodology
4 Methodological Framework

4.1 Theoretical Approach

To conduct the proposed thesis, a theoretical approach, focused on theories relevant to urban design and sustainable development, constitutes of an important framework in order to seek and analyse basic information regarding the research questions and the results. The information for the research on a theoretical level, will be gathered mostly by a literature review which includes books, magazines, articles, lectures on relevant courses, document analysis and inter alia internet sites in order to have access in updated information. That way, it would be possible to create a theoretical framework that will provide also an important historical background and a basis in order to comply with the aim of the research project.

4.2 Case Study Methodology

After the biggest part of the theoretical approach will be completed, an empirical study will be carried out. Three different case studies will be used to explore the contribution of BREEAM Communities in the design process and will be examined with comparative methods; a case that is developed using the BREEAM Communities, one that is are under development using the tool and one case that is being developed without the use of BREEAM Communities. According to Groat & Wang (2002), in a case study a phenomenon from real life is investigated empirical. It can also be interpreted as an investigation of a context in an empirical way. Hence, case studies will be used to gather information, which then will be analysed and lead to concluding remarks.

Hence, in order to conduct this research regarding the benefits and the drawbacks of the use of BREEAM Communities in the design and plan of new communities, the case studies will play a significant role as an overall research method approach for further investigation.

As mentioned above, were chosen three case studies, two of them using BREEAM Communities and one of them not. This choice was done after assessing a number of relevant criteria (country, size of development, type and aim of the project etc.) that were set based on the research questions and in order to meet the needs of this study by gaining knowledge from these practical examples that will contribute to my research. The last case, Stockholm Royal Seaport, that was chosen even if it doesn’t make use of BREEAM Communities, is an interesting example to study because during this project the developers tried out a number of tools and between them BREEAM Communities and after going through all its criteria in a beta test for the case, they decided to reject it and develop their own process and assessment tools. The reasons they rejected the tool might provide valuable information regarding the contribution of BREEAM Communities in a project and its influence during the development process. The criteria and details regarding the selection process are further analysed in the Chapter 6 below, where all the cases are described and analysed.

Before the presentation and the analysis of the selected cases, it would be important to have a deeper view in the theoretical meaning of a case, what it could offer in a research and in what way in order to gather the information needed.

Many theorists studied the concept of the “case” and “case study” and among them Ragin & Becker (1992) and Stake (1995). One common distinction for the case studies is between “quantitative” and “qualitative”, based on the type of the data collected from those. More literature and analysis is focused on “qualitative” case studies since they demand deeper and usually more complex interpretation because in contrast with the “quantitative” the information gathered can be more abstract and difficult to lead to something more solid as a result from the study.

According to Stake (1995:1), “Case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances”. More general, according to Ragin & Becker (1992:121), “cases are made by invoking theories, whether implicitly or explicitly, for justification or illumination in advance of the research process or as its result”. Therefore a case is a specific, complex, functioning thing (Stake, 1995:2) and according to Louis Smith1 a case can be characterised as a “bounded system” (in Stake, 1995). That way it could be supported that a case study can be a productive way or strategy in order to develop or explain further a theory.

1 One of the first educational ethnographers (Stake, 1995).
Even if case studies considered to be focused in one particular issue or study area they can be used in order to claim information for broader issues if they are handled in the right way. According again to Ragin & Becker (1992) even though cases imply particularity, “when researchers speak of a ‘case’ rather than a circumstance, instance, or event, they invest the study of a particular social setting with some sense of generality” (Ragin & Becker, 1992: 121).

Hence, a case study can be used to learn more about this particular case and then we call it an “intrinsic case” or to gain a more general understanding about an issue and for this one it is used the term “instrumental case study” (Stake, 1995). In this thesis the role of the case studies that will be used is instrumental since the aim of the thesis is to understand something else, something broader regarding the assessment tool BREEAM Communities and urban design not only for its use in these specific cases. In this latter category of case studies, research questions have a leading role in the study and cases are the tool through their analysis, the aim is to get insight into the questions.

Based on the research questions of this thesis there was a categorization of different cases studies that facilitated the selection of the cases that will be presented in a later section (see Chapter 6). Different criteria led the selection, with more important the country and the area that is of interest for the study, the time-period that each case was started and accomplished, the type of development – building scale, community scale- the use or not of assessment tools during the development etc.

Through these cases I don’t expect to represent all the BREEAM developments, but that will arise common problems of complying with sustainable urban development procedures and what I expect is to learn a lot about the process, the aim and the final product of such a development. Even if sometimes cases seem to be a poor basis for generalization, the cases that will be studied will be studied at length (Stake, 1995) hence certain generalizations will be drawn.

Regarding the process that would be followed for the analysis of the different case studies, an important stage would be their interpretation. According to Fred Erickson, a writer focused on qualitative studies, “the most distinctive characteristic of qualitative inquiry is its emphasis on interpretation” (in Stake, 1995:22). In order to interpret the data gathered from the case studies, continuous observation and analysis is required which will lead to modification of the research questions during the study.

To conclude the analysis of a case, according to Ragin & Becker (1992:122), every theory includes a number of cases; “they are cases because they embody casual processes operating in microcosm” ; the idea of the case study is to present an argument about how social forces are formulated and also provide through analysis results regarding specific settings. That demonstration, is intended to provide at least, “one anchor that steadies the ship of generalization until more anchors can be fixed for eventual boarding” (Ragin & Becker, 1992:122).

4.3 Interviews Methodology

Interviews will be the key-method for data collection regarding both case studies and BREEAM Communities. So, with the empirical study will also be examined the research problems through interviews, mainly conducted in cooperation with actors related also to urban design such as planning authorities, architects etc. in order to examine their view regarding the use of BREEAM Communities and its contribution. Interviews, will be the method that will provide knowledge in practical level and since the research questions concern urban design processes it is of great importance to gather information based on an empirical approach.

Interviews give the chance for a more direct insight in the case studies and gathering of more direct information. According to Stake (1995:12), “The qualitative case researcher tries to preserve the multiple realities, the different and even contradictory views of what is happening”; based on this statement it could be assumed that the interviews are the tools that will give access to different point of views from different people for the same projects.

The information gathered from the interviewees will comprise the base for generalizations and further development of relevant theories. According to Kvale (2007:9), “The qualitative interview is a key venue for exploring the ways in which subjects experience and understand their world. It provides a unique access to the lived world of the subjects, who in their own words describe their activities, experiences and opinions”. Hence, the interview is a powerful way of producing knowledge and understand the human situation (Kvale, 2007).

The interview study, includes five qualitative interviews with people related to urban design and sustainability issues such as architects, planners and sustainability coordinators. The interviews lasted 35-50 minutes, the
most of them conducted at personal meetings and one of them by telephone. All interviews were recorded after permission of the interviewee and the recordings enabled a transcript of the entire conversation giving a better basis for further analysis. The interviews were semi-structured and allowed for follow-up questions.

Before the interview process started I had already prepared a set of questions aiming to two different “information sets”. The first set of questions referred to the case study in which each actor is involved. So, through my questions I aimed to acquire knowledge and information regarding the project, its background, its aim and its development stages as well as how BREEAM Communities is incorporated in the development plans and what influence can have to the urban design aspect for the case. The second set includes more general questions regarding the interviewees’ perspective about the BREEAM Communities as a process and assessment tool in order to be able to see through “interviewees’ eyes” how BREEAM Communities can be rated as a process tool and which are its advantages and disadvantages. (See Appendix p. 84; The interview guide)

The five interviewees were persons that worked or are still working with the BREEAM Communities tool and persons that worked in Swedish projects without the use of BREEAM Communities, but they are informed about the tool. The interviewees were – since none of them wanted to be anonymous - :

Anna Barosen, the sustainability coordinator who is working in Diligentia and she is responsible for BREEAM Communities for the cases of Masthusen, Malmö and Kabeln, Sundbyberg.

Anders Nilsson, planning architect in Malmö in White Arkitekter, responsible for the project of Masthusen

Stefan Modig, architect and urban planner working for Stockholms stad for the case of Stockholm Royal Seaport.

Ulf Ranhagen, Professor of Urban and Regional Studies at the Royal Institute of Technology in Stockholm and Chief Architect at Sweco Architects, related to the case of Stockholm Royal Seaport.

Mats Johan Lundström, techn. lic., doctoral / PhD candidate at Urban Planning and Environment, at the Royal Institute of Technology in Stockholm.

These characteristic qualitative interviews aim on the one hand, to the identification of similarities and differences in the interviewees’ responses and on the other hand to the exportation of results that seem particularly interesting regarding the influence of BREEAM Communities, positive or not, on urban design issues.

So, to conclude, the choice of the interviewees were done according to their area of expertise and their knowledge or/and occupation with BREEAM Communities. Thus, I searched for each case the persons that are involved and since my study is focused on urban design aspect the first criterion was to find actors related to design and planning processes such as architects, urban designers, urban planners etc. Furthermore, this study is examining the influence that BREEAM Communities can have in the urban design aspect, hence these actors should also have knowledge of the BREEAM Communities tool either by working with this or being responsible for its application in the project. For this latter case I consider the idea of talking also with people that may not be so relevant with urban design in specific but they are responsible for BREEAM Communities use and integration in the development. Therefore, the five interviewees selected, belong to two different categories: actors relevant to the use and integration of the tool in the project (such as sustainability coordinators) and actors relevant to urban design process (such as architects and urban planners). This choice was made having in mind the research questions and as it is analysed above, I consider that the interviews with these actors can provide valuable information not only about the case studies but even more regarding the use of BREEAM Communities and especially its influence in urban design based on each interviewee’s
BREEAM Communities

Sustainable Urban Development

Why Certify Sustainable Urban Development? What is the Use of an Urban Certification System?

Zoom in BREEAM Communities

BREEAM Communities and Urban Design

Challenges
5 BREEAM Communities

5.1 Sustainable Urban Development

The last years, there is an increasing number of buildings in Sweden that are receiving environmental certification and demand is increasing rapidly. However, apart from the assessment of buildings, the interest regarding certification systems had started to grow bigger. Consequently, building firms, municipalities and authorities have begun to adopt a wider approach regarding the environmental certification of entire districts (Bergström, n.d.).

Currently in Sweden, there is a broad number of certification systems, regarding buildings and larger developments, such as districts and communities in order to assess and enhance their environmental sustainability.

Regarding the scale of the larger developments, there is not a standard way to define exactly their boundaries. When it comes to the assessment of a community, the assessed boundaries and its exact dimensions cannot be easily established as long as they vary between different countries for instance. Hence, urban areas are considered the “institutional and geographical level closer to citizens where sustainability can efficiently be promoted and assessed” (Berardi, 2013).

Sweden Green Building Council (SGBC), is an organisation owned by firms and organisations in the Swedish building and property sector, aiming to an impact on environmental and sustainability activity in the industry (Bergström, n.d.).

Except for this organisation developed in a Swedish context, there are more international certification tools that are also suitable to be used for assessment of Swedish buildings and communities. These international certification systems are:

- **Green Building**: the recently mentioned EU system that has been established in the Swedish market.
- **BREEAM**: from the UK: is the most frequently used environmental certification system in the world.
- **LEED**: was developed in the US and is the best known environmental certification system in the world.

The recent years, there is a great interest in certification for neighbourhoods in Sweden. Since spring 2010 has started an ongoing project regarding the Sustainability Certification of neighbourhoods (HCS). The project aims to the development of a Swedish framework for sustainable urban development and for that reason it evaluated international systems for neighbourhoods in order to develop a Swedish custom version and the Swedish certification for neighbourhoods (Sweden Green Building Council, 2013).

However, this study is focused on BREEAM certification system and specifically one tool of this system, the BREEAM Communities. BREEAM Communities is an assessment tool developed in order to provide the chance and the ability to “measure” and “determine” whether or not comprehensive plans, and design and planning activities are leading a developed or under development community to become more sustainable and it is also a method to report on urban sustainability. Therefore, it could be assumed that BREEAM Communities can become a process through which sustainability can be attained.

5.2 Why Certify Sustainable Urban Development? What is the Use of an Urban Certification System?

Today almost the half of Earth’s population lives in cities and more and more people are choosing to move and settle in cities. By the year 2030, this proportion will reach the 60% (Taylor, 2012). That means that cities and their inhabitants have an important role to play in the transition to more sustainable societies. Even though cities occupy only 3% of the earth’s land, at the same time they consume 75% of global energy and they are responsible for 80% of global greenhouse gases (Taylor, 2012). However, cities can still be sustainable and there is a common agreement that a lot of cities have a very good potential to lead to more sustainable developments and for that reason wide research has been made and continues regarding this aim.

The certification of both new and old developments is a way to ensure the promotion of more sustainable developments. However, the city is far more than a collection of buildings; rather it can be seen as a set of systems for living, working and playing that continuously interact into built forms (Vale & Vale, 1991). “It is,
by looking at systems, that we can find the face of the city of tomorrow” (Vale & Vale, 1991; 266). Therefore, the certification referred above should be applied in every system that consists part of the larger system, which is the city.

According to what is analysed above, it could be considered already obvious that the main reason and aim of the certification of urban communities is the development of sustainable urban environments. However, there are a lot more specific reasons that are encompassed in this general idea.

Having on focus the international scheme BREEAM Communities, there are some specific reasons that occur from its use. According to Johanna Andersson (n.d.), from IVL Swedish Environmental Research Institute, the use of urban certification systems such as BREEAM Communities can:

- offer market recognition
- enhance implementations of Best Practices
- help to stimulate innovations
- highlight the benefits of sustainable construction
- help to develop a model for partnership.

Moreover, there are also other various reasons regarding the significance of the use of certification systems. As it is stated by persons relevant to the use of BREEAM Communities, such as the assessor of the scheme Per Larsson and also surveyor at Malmö Stad, the use of certification systems can move the sustainability issues forward, facilitate early decision-making and also help the organization of complex issues. Additionally, the way these schemes are developed and organized through long checklists, makes it easier for the developers to clarify the goals, identify links between neighbourhoods and certify the effort being done; as well as it is claimed that the use of these systems can add value to building/real estate and also a positive influence on the yield and regarding the market, increase the attractiveness of the certified building or neighbourhood (Larsson, 2013).

According to Pineo (2012), some of the most important drivers regarding the use of the certification system BREEAM Communities during urban development are the following:

BREEAM Communities is presented as a helping tool for the neighbourhood planning. Below, through the description and the analysis of the case studies and the interviewees’ experience, will be checked the validity of these reasons in actual practice. According to Helen Pineo (2012), BREEAM Communities Manager at Building Research Establishment (BRE), there are important reasons that make BREEAM Communities helpful and required during neighbourhood planning since it can:

- Assist with aligning the neighbourhood plan with the core planning principles in the National Planning Policy Framework (NPPF)
- Provide a framework for identifying the characteristics of an area
- Focus discussions on realistic aspirations for new development
- Give a degree of credibility and transparency to a neighbourhood plan
- Assist in gaining community buy-in for the neighbourhood plan by using a credible process.

5.3 Zoom in BREEAM Communities

BREEAM was first launched in 1990 and it was the world’s first

Facts and figures

To date 8 projects have been certified under BREEAM Communities with a further 18 currently registered and undergoing assessment, with the size of development ranging from 2ha to 179ha (as of the publication date). There are currently 66 licenced assessors in 13 countries (BRE Global, 2014a).

Figure 5.2.1. BREEAM Communities registered/certified schemes. Source: BRE Global, 2014a.
environmental assessment method for the design of new buildings and the method is owned by BRE Global Ltd. (BREEAM Communities, 2012). The Building Research Establishment (BRE) started as a governmental scientific research institute, then was gradually privatized and currently is owned by the BRE Trust and it started gaining a commercial dimension (Schweber, 2013).

BREEAM is being updated regularly over the years and it is expanded rapidly in and outside United Kingdom, currently in over 50 countries (BREEAM Communities, 2012). It is based on a “balanced scorecard approach with tradable credits in order to enable the market to decide how to achieve optimum environmental performance for the project” (BREEAM Communities, 2012). Hence, it can be considered a flexible tool since it gives the chance to choose and focus on the most important issues according to the developers and the needs of the development in order to acquire a good score. To maintain a flexible system BREEAM adopts a ‘balanced score-card’ approach to the assessment and rating of a development’s performance. This means that non-compliance in one area can to some extent be off-set through compliance in another to achieve the target BREEAM rating, subject to achieving the required overall percentage score (BREEAM Communities, 2012). However, to ensure that performance against fundamental sustainability issues is not overlooked in pursuit of a particular rating, BREEAM sets mandatory standards of performance across the five categories (BREEAM Communities, 2012).

BREEAM has developed a range of formats from country specific schemes, adapted for local conditions, to international schemes aiming to the certification of individual projects anywhere in the world (BRE Global, 2014). The schemes developed are: BREEAM New Construction, BREEAM Domestic Refurbishment, BREEAM Communities, BREEAM In-Use, Code for Sustainable Homes, BREEAM International (BRE Global, 2014).

As it is referred above the BREEAM is suitable for the assessment of developments from smaller to bigger scale which includes:

- Buildings: the assessment is more detailed and limited to building-construction level
- Neighbourhoods/ communities: the assessment follows more holistic approaches regarding whole areas and what is included and therefore there is the need to be addressed in the earliest stage of the design process
- Cities (BREEAM Communities, 2012; Larsson, 2013).

BREEAM Communities is an independent, third party assessment and certification standard that assesses, rates and certifies international processes (BREEAM Communities, 2012). It is a framework that considers “issues and opportunities that can affect sustainability at the earlier stage of the design process for a development”, addressing “environmental, social and economic sustainability objectives which have an impact on large-scale development projects” in the UK and internationally (BREEAM Communities, 2012).

Regarding the scale of assessing developments, BREEAM Communities considers sizes from 10 units - small projects to 6,000 units - large projects as an urban community (Berardi, 2013). Moreover, it also considers bespoke projects of more than 6,000 units, after confirmation by the British Research Establishment (Berardi, 2013).

The latest version of BREEAM Communities Scheme, the 2012 version, is attached to “the BRE Global international Code for a Sustainable Built Environment which is a set of strategic principles and requirements that define an integrated approach to the design, management, evaluation and certification of environmental, social and economic impacts of the built environment” (BREEAM Communities, 2012). Compared to the previous version of 2011, BREEAM Communities 2012 chose to widen the involved stakeholders in its developments, aiming to become a mean of support for the design and the assessment for smaller to bigger scale developments’ stages, including the master-planning of large scale development (BREEAM Communities,
As it is described in the technical manual for BREEAM Communities (2012), there are three steps during the assessment of sustainability at the master-planning level (see Table 5.3.1):

The issues covered within BREEAM Communities technical manual are grouped to 5 categories including each of them the appropriate criteria (mandatory – optional- project-specific issues) for Steps 1 to 3 (BREEAM Communities, 2012). Moreover, each BREEAM issue contains a Compliance Notes table which provides additional guidance.
<table>
<thead>
<tr>
<th>STEP 1</th>
<th>STEP 2</th>
<th>STEP 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOVERNANCE - 9.3%</td>
<td>GO 02 - Consultation and engagement</td>
<td>GO 04 - Community management of facilities</td>
</tr>
<tr>
<td>GO 01 - Consultation plan</td>
<td>GO 03 - Design review</td>
<td></td>
</tr>
</tbody>
</table>

Social and Economic Wellbeing - 42.7% Addresses societal and economic factors affecting health and wellbeing.

| SE 01 - Economic Impact | SE 05 - Housing provision | SE 14 - Local vernacular |
| SE 02 - Demographic needs and priorities | SE 06 - Delivery of services, facilities and amenities | SE 15 - Inclusive design |
| SE 03 - Flood Risk Assessment | SE 07 - Public realm | SE 16 - Light pollution |
| SE 04 - Noise pollution | SE 08 - Microclimate | SE 17 - Training and skills |
| SE 09 - Utilities | SE 10 - Adapting to climate change | | |
| SE 11 - Green infrastructure | | | |
| SE 12 - Local parking | | | |
| SE 13 - Flood risk management | | | |

Resources and Energy - 21.6% Addresses the sustainable use of natural resources and the reduction of carbon emissions.

| RE 01 - Energy strategy | RE 04 - Sustainable buildings | |
| RE 02 - Existing buildings and infrastructure | RE 05 - Low impact materials | |
| RE 03 - Water strategy | RE 06 - Resource efficiency | |
| | RE 07 - Transport carbon emissions | |

Land Use and Ecology - 12.6% Addresses sustainable land use and ecological enhancement.

| LE 01 - Ecology strategy | LE 03 - Water pollution | LE 06 - Rainwater harvesting | |
| LE 02 - Land use | LE 04 - Enhancement of ecological value | | |
| LE 05 - Landscape | | | |

Transport and Movement - 13.8% Addresses the design and provision of transport and movement infrastructure to encourage the use of sustainable modes of transport.

| TM 01 - Transport assessment | TM 02 - Safe and appealing streets | TM 05 - Cycling facilities | |
| TM 03 - Cycling network | TM 04 - Access to public transport | TM 06 - Public transport facilities | |

Innovations
Recognises and promotes the adoption of innovative solutions within the overall rating where these are likely to result in environmental social or economic benefit in a way which is not recognised elsewhere in the scheme.

Table 5.3.2. Steps, categories and criteria BREEAM Communities 2012 scheme.
The categories, criteria/issues presented in the table above (see Table 5.3.2), some of them mandatory and some of them optional, determine the overall performance of the development expressed as a percentage of credits awarded that corresponds to a certain BREEAM Rating. The BREEAM rating benchmark for the BREEAM Communities 2012 scheme are as follows: (see Table 5.3.3).

<table>
<thead>
<tr>
<th>BREEAM RATING</th>
<th>% SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTSTANDING</td>
<td>≥ 85</td>
</tr>
<tr>
<td>EXCELLENT</td>
<td>≥ 70</td>
</tr>
<tr>
<td>VERY GOOD</td>
<td>≥ 55</td>
</tr>
<tr>
<td>GOOD</td>
<td>≥ 45</td>
</tr>
<tr>
<td>PASS</td>
<td>≥ 30</td>
</tr>
<tr>
<td>UNCLASSIFIED</td>
<td>&lt; 30</td>
</tr>
</tbody>
</table>

Table 5.3.3 BREEAM Communities rating benchmarks

Moreover, apart from the 5 categories in BREEAM Communities, there is a sixth category, the “Innovation”, which includes credits that can provide an additional recognition of a development that innovates in the field of sustainable performance (BREEAM Communities, 2012). An additional 1% score can be earned to a final BREEAM Communities projects score for each innovation credit achieved, which will be recognised by the BREEAM assessor (BREEAM Communities, 2012).

BREEAM Communities 2012 scheme can lead to two certification stages:
- Interim BREEAM Communities certificate (Step 1)
- Final BREEAM Communities certificate and rating (Steps 2 + 3).

When all the issues included in the Step 1 are completed, BREEAM requires the submission of the evidence verifying performance against the assessment criteria for quality assurance; then, if BRE Global judges that all of the mandatory criteria have been achieved it will issue a certificate for Step 1, but an assessment rating will not be given as in the Final stage (BREEAM Communities, 2012). The Interim stage can be considered a way to consider sustainability issues early in the development process in order to have a chance to reduce potential future impacts of the development and overall costs. On the other hand, only the Final certificate (Step 2+3) can provide an overall sustainability rating against the commitments of a certain development project (BREEAM Communities, 2012).

5.4 BREEAM Communities and Urban Design

“Urban design is the art of making places for people” (CABE, 2000). According to Chartered Association of Building Engineers (CABE, 2000), urban design includes the way places work for people and other matters such as community safety and also the image of all these, how they look. Its main aim is the development of livable and successful districts, neighbourhoods and cities that will promote and handle in the best way possible the connections between people and places, movement and urban form and also the relation between the nature and the built environment (CABE, 2000) (see Table 5.4.1).

The connection between BREEAM Communities and urban design is obvious due to the fact that urban design is considered the key of creating sustainable developments and the conditions for social progress, economic prosperity and prudent use of natural resources.
According to BRE Global (2014a), BREEAM Communities is the way to improve, measure and certify social, economic and environmental sustainability of the large-scale development plans by integrating sustainable design into the masterplanning process. Through the manual is incorporated the design aspect, especially regarding to the public spaces in the development. Then, BREEAM Communities awards a number of credits for involving the community in design, undergoing a design review and planning aiming to economic, social and environmental change (BRE Trust, 2012).

BREEAM Communities aims to the engagement of stakeholders at the earliest stages of the planning process in order to improve the opportunity for the integration of sustainable design (BRE Global, 2014a). Moreover, BRE Global (2014a) claims that pertaining to urban design aspect, design teams have reported that the use of BREEAM Communities can bring a variety of sustainability benefits such as:

- Sustainable, safe and well integrated transport infrastructure
- Vibrant public spaces, with well integrated green infrastructure and high quality landscaping
- Reduced energy and water demand, reducing operational costs
- Optimal provision of facilities, amenities and utilities and
- Enhanced economic activity in the local area.
In the diagram above (see Fig. 5.4.2), what is illustrated is that the tool gives priority to opportunities regarding the integration of sustainable design keeping the costs to a low level during this process in order to give the comfort and time to discuss and work on masterplanning, having a big margin for improvements. During the feasibility studies stage, all relevant stakeholders are included in order to increase the integration in all levels. When the design stage starts then, the cost begins to increase and the margins for improvements are smaller and each improvement or change in this stage implies also higher costs.

Through the analysis of the BREEAM Communities 2012 scheme, they can be identified particular categories and criteria/ issues connected to urban design (see Table 5.4.2). In order to have a clear view regarding the parts of a development that can be affected by BREEAM Communities during the design process, I identified the relevant criteria for each step and category and they are collected and presented in tables in a detailed way based on the checklist of the scheme (see Appendix p. 75; Tables 5.4.3. – 5.4.11).

The identification of urban design related criteria is based on both objective guidelines connected to urban design principles and theories and personal choices with the perspective of an architect. Above are analysed the objectives of urban design referring to: the character of a place – its identity, public and private places and the relation between those two, the quality of public spaces regarding their architecture and the influence they can have on people who are using them, mobility issues, special characteristics of the place such as landmarks, specific routes etc. issues related to the adaptability of the place referring to the ability to the place to respond to social, technological and economic changes and finally the ability to promote diversity and variety of uses according to the local needs.

Hence, based on these objectives, enhanced by my experience as an architect and urban designer I went through all the criteria included in BREEAM Communities scheme and I characterised the criteria that meet the above characteristics as urban design related.

Finally, through this exercise I made a distinction between the criteria of BREEAM Communities scheme in urban design related and other criteria, in order to, first, have an overview of how BREEAM Communities incorporate urban design as an aspect during its use and application and then to use these results in order to make a quantitative analysis (see Chapter 7) that will lead to more practical results regarding the influence of BREEAM Communities on urban design based on specific numbers and percentages, according to the criteria’s weighting as they have been set in BREEAM Communities’ checklist.
5.5 Challenges

Certification tools are designed and developed in such a way in order to seem helpful, well-structured, setting clear guidelines for the design and planning process. Notwithstanding, there are various challenges hidden behind them considering the different actors in the development process.

For instance, according to the BREEAM assessor Per Larsson (2013) regarding the development of new neighbourhoods how are the values of a neighbourhood created? Which can also be translated as a contrast between Business economics and National Economy. In that case who and how will decide regarding issues such as refurbishment or replacing or who the future inhabitants of the area will be and what will be their needs and desires in order to define the design principles regarding the specific area and how or why they are going to differ from those of other areas?

Moreover, an important and challenging issue is the participation: active or passive? When in the process should be considered necessary and what weight should be given. Are all the necessary actors involved in the right way? and so forth.

Another important issue that cannot be ignored especially when it comes to the investors’ perspective, is the economic evaluation of certification, not only during the development but in a longer term perspective. Considering the certification process, it costs a significant amount of money including the fee for the assessor and the money for the certification diploma as well as the construction costs in order to keep up with the sustainability objectives set by the scheme (Bergström, n.d.).

Even more, a challenge regarding the certification tools, is to update them and adjust them to the evolution of the communities and to the needs and changes of the present and future conditions of the areas. And to extend that, another issue is the development of various frameworks of the same tool in order to be adjusted in the context of the development, like for example the differences in the planning systems of different countries. A question is posed in that case: is it better to develop a unique, common framework following the same guidelines for all the cases or various frameworks for different contexts?
Chapter 6

Case studies

The Selection of Practical Examples

Analysis of selected cases

Masthusen, Västra Hamnen, Malmö

Kabeln, Sundbyberg

Royal Seaport, Stockholm
6 Case studies

6.1 The Selection of Practical Examples

Based on the research questions set from the beginning, there was a categorization of different case studies that facilitated the selection of the cases. The criteria that led the selection varied, with more crucial the country that is of interest for the study, the time-period that each case was started or decided to be started, the type of development – building scale, community scale etc.- and most important the use or not of the assessment tool BREEAM Communities.

Since the country selected for the study was Sweden, the decision was to select case studies that are placed in Sweden and developed according to Swedish legislation and laws. Moreover, regarding the time-period of development, the case studies selected, are of the last major development projects in Sweden and characterised in documents as modern examples of sustainable development. Furthermore, the three cases refer to community scale development and their common characteristic is that they are former industrial areas very close to big cities and well connected with inner city that are meant to become mixed use areas (including housing, offices, commercial buildings, retail etc.). Even more, both Masthusen and Kabeln are areas that had bad reputation (dark and scary areas, high crime rate etc.). And finally, the first two cases, Masthusen and Kabeln are being developed using BREEAM Communities scheme as a process and assessment tool, the first one in a more developed phase using a previous version of the scheme and the second one in the beginning of its development, using the current version of BREEAM Communities, 2012. While the third case, Stockholm Royal Seaport, is a major development for Stockholm city, of great size, which is characterised by its developers as a model of sustainable development that can be used internationally and also rejected the use of BREEAM Communities scheme after testing it for the case.

6.2 Analysis of selected cases

Below follows a description of the selected case studies in order to present and analyse information related to each case, giving a broader perspective of the context in which BREEAM Communities was used and moreover, I chose to focus on the issues related especially to the urban design perspective.

For each case study, are analysed details regarding the area and also presented supporting information regarding the background and the history of the larger area, in order to form a complete view of the context and the circumstances under which the development took place. Then follows the introduction of BREEAM Communities scheme in each case, where it is analysed what is the main aim of using this scheme for the case, how influences the current and future development of the area and the plan regarding the stages followed during the process.

After that, more practical issues are presented regarding the process of assessment and development connected to the urban design perspective and BREEAM Communities’ orientation to sustainable development and urban design.

And for concluding each case, are presented the developers’ perspectives regarding the design of the project and the influence of BREEAM Communities on this.
Masthusen, Västra Hamnen, Malmö

The area

Masthusen is an approximately 100,000 square-meter area in the middle of the Western Harbour in Malmö, Sweden’s third largest city (280,000 inhabitants) which is located in the centre of the Öresund Region (see Fig. 6.2.1) with good connections in all directions (Malmö stad, 2008).

Background and History

Just 100 years ago, the area now known as the Western Harbour was virtually non-existent (Malmö stad, 2008). The Western Harbour took shape in the 20th century, constructed on land recovered from the sea while the last stage of land recovery occurred in 1987 when Western Harbour took its current appearance (Malmö stad, 2008). Kockums’ first vessel and then Kockums Mechanical Works moved to the Western Harbour in the 1870s and the development of the area was rapid. Eight years after 1911 were working 1400 people at Kockums and twenty years later the number had reached the 2700 employees and the expansion continued that way (Diligentia, 2010d). In the area, around 1973 was built world’s largest crane but at the same year came the global oil crisis and a general downturn. As a result Kockums’ civilian ship production ended in 1987 but it was replaced two years later by the world’s then most modern car factory Saab-Scania at Kockums shipyard (Malmö stad, 2008).

In 1991 when General Motors merged with Saab-Scania forming the Saab Automobile, the Saab factory closed completely and therefore the land and the buildings in the area were bought by the City of Malmö in 1996 (Diligentia, 2010d). Moreover, the Kockums crane was dismantled in 2002 leaving the tower Turning Torso as the only symbol of the post-industrial Malmö (Malmö stad, 2008). After Saab’s closure the Saab factory transformed into trade fair, conference facilities and a new exhibition centre for the City of Malmö (Diligentia, 2010d).

The following figure is part of the new comprehensive plan for Malmö (see Fig. 6.2.2). It indicates the areas in Western Harbour that are in focus regarding future development plans, based on high environmental standards emanating from a strategic plan which will be used as a basis for the consultation regarding the development (Malmö City Planning Office, 2011).
Moreover, according to Anna Barosen (2014.05.15), the main characteristic of the area before the development plans started, was that there was only one big building when Diligentia bought the area, about 15 years ago. This building needed to be torn down in order to make land for the development. This means, as Anna Barosen (2014.05.15) stated, that:

There weren’t like characteristic old buildings or beautiful buildings in the area, it was like an empty box, only gravels came after we torn it down.

(Anna Barosen)

Moreover, regarding the character of the area Anna Barosen (2014.05.15) added that:

Malmö, the municipality, has been fighting with a quite tough atmosphere as long as many people were leaving the city because of reasons such as high crime rates and therefore, the main aim of Västra Hamnen is to design a fresh and modern area in order to start changing this feeling.

(Anna Barosen)

On 17 May 2010, Diligentia launched together with the Mayor Ilmar Reepalu of Malmö the demolition of the exhibition halls, former Saab factory, and another new development began in the Western Harbour (Diligentia, 2010d).

Diligentia, is one of Sweden’s largest real estate companies that develops, manages and rents properties throughout Sweden’s three biggest regions: Stockholm, Gothenburg and Malmö (Diligentia, 2014b). The focus of this company is on four distinct business areas: office space, retail/commercial properties, residential buildings and public properties (Diligentia, 2014b).

BREEAM Communities for Masthusen

The Masthusen development in Malmö, is the first district in the Nordic region and outside of the UK to be certified under the international system BREEAM Communities (Diligentia, 2010a). Diligentia decided to use BREEAM Communities certification for Masthusen to help maximise the project’s sustainability benefits and to demonstrate these achievements to the City of Malmö and future developer partners and tenants (BRE Global, 2010). As Anna Barosen (2014.05.15) stated, Masthusen was the first case certified by BREEAM Communities within the Nordic countries, but it was not considered a pilot case. It was Diligentia’s decision to use the international scheme. Anders Nilsson (2014.05.21) also added that:

It is significant the fact that Diligentia bought the land and decided themselves to use BREEAM Communities certification system and see how to plan, construct and develop the area based on that. So it has not a lot to do with the city of Malmö which is very untypical for Sweden.

(Anders Nilsson)
The steps that were followed during the development of the area as Anna Barosen (2014.05.15) and Anders Nilsson (2014.05.21) indicated in their interviews, are the following: Before they started using BREEAM Communities, it was already prepared the skeleton plan — comprehensive plan before the detailed plans. According to Anna Barosen (2014.05.15), the actors who prepared the skeleton plan were Malmö Stad together with Diligentia and it was a “light” format of a detail plan. Before the skeleton plan started, the situation was: one big property, industrial use and no roads or parks that the municipality owned (Barosen, 2014). But after the skeleton plan the situation changed radically: divided into 18 blocks “bygträff” — this made the development possible and they could also sell some of the blocks, it became mixed use development (offices, residential, retail, pre-school etc.) and it was also rather set where the residential units would be among these and the municipality was taking over two roads and the square (Barosen, 2014).

When Masthusen project was started, it was used an earlier edition of BREEAM Communities and there were two different compulsory stages: the outline planning stage and the detailed planning stage while in the current edition there are three stages as it is already referred in the analysis of the scheme above (see Chapter 5). As Anna Barosen (2014.05.15) described it:

> Since the outline planning stage consists of around 60 issues, more than what the current scheme requires, we had to go through all these questions in the first stage and then set our goals and how far we can reach in each issue and then in the detailed planning stage we should set the final goals regarding all the issues. Moreover, during the outline planning stage we developed a sustainability programme, while going through all these issues from BREEAM Communities and in this sustainability programme all the demands were discussed and analysed in order to consist a basis for the detailed planning stage. Even more, when issues arise in the project, we followed a consultation process with people and companies related to the area and the surroundings and the outcome of this process consists also an input for the detailed planning stage.

(Anna Barosen)

Another important issue regarding the process as was described by Anna Barosen (2014.05.15) is that the detailed plan can be more than one. For instance until now for Masthusen there are six detailed plans, since each block or a group of blocks is developed in different stages therefore, different detailed plans were developed for each block/group. Moreover, the fact that there was the skeleton plan — comprehensive plan from the beginning, facilitated the process regarding the development of the detailed plans.

Regarding the planning system in Sweden, as Anna Barosen (2014.05.15) referred, the detailed planning stage is required by legal rules in Sweden; so what BREEAM Communities offered to this process was that the information gathered during the outline planning stage must be included in the detailed planning stage and investigate and set goals for all the criteria required by BREEAM Communities checklist.

The district has received now the first stage of BREEAM Communities certification. Although according to Diligentia developers, the individual buildings will have separate classifications according to BREEAM Commercial scheme (Diligentia, 2010e).

Since the mid-2000s, Diligentia worked together with the City of Malmö regarding the development and the planning of the area (see Fig. 6.2.3). In 2007, as it was described by Anders Nilsson (2014.05.21), it was organised by them an invited competition for the master-plan among four architectural firms where Kanozi Architects won that competition and by then they were responsible to work on the design and the structure of the area (Malmö stad, 2011). The main plan was developed until the year 2008 and a detailed plan for the local roads was developed in 2010 (Malmö stad, 2011). Subsequently, in 2011 a number of industrial buildings in an area of 45000 sqm, covered in the past by shipbuilding facilities, automobile factories and exhibition halls, was demolished (Malmö stad, 2012).
Moreover, according to Anders Nilsson (2014.05.21), after the submission of the outline planning results, which started in 2011, it was clear that a lot more work needed to be done for many issues that were required for the certification, lot more than expected in first place. Regarding the process during all these years, Anders Nilsson (2014.05.21) added that:

The master-plan of the area looks almost the same with the original proposal from the competition and even though many changes have been made for the 18 blocks, the main structure has remained.

(Anders Nilsson)

Until now, in Masthusen, Diligentia has worked with BREEAM phase “outline planning stage” for two years and then the next phase the “detailed planning stage” had begun (Diligentia, 2010e). In the case of Masthusen, White Arkitekter did the assessment work using as a basis the BREEAM Communities checklist developed in 2011, which led to the first level of BREEAM Communities certification for Masthusen (White Arkitekter, 2014). To achieve the district’s final certification they need to complete the next phase, the detailed planning stage (White Arkitekter, 2014).

The fact that BREEAM Communities assessment is undertaken outside the UK, needed for the bespoke criteria to be developed in order to take account of local factors and priorities (BRE Global, 2010). Lessons learned from earlier Western Harbour developments were used to enhance some of the Masthusen assessment criteria, such as providing space for new, small businesses and ensuring that new businesses complement rather than compete with the existing (BRE Global, 2010). Moreover, the focus on sustainability includes an emphasis on designing the district to be adaptable for future climate changes, vehicle free transport solutions, refuse management and the use of sustainable buildings materials (BRE Global, 2010). According to Diligentia developers, the urban environment was examined regarding its contribution to future climate change and its capability to adapt efficiently to new conditions, such as creating vegetation with high ecological value and handling resources like water, materials and waste (Diligentia, 2010a).

So, from another perspective, according to Anders Nilsson (2014.05.21), as aim of this development could be also seen:

The chance of working deeper with sustainability issues and acquire knowledge on this field since working with this framework, BREEAM Communities, was something new and challenging and provided us with the ideal opportunity to review how we develop sustainable communities in Sweden. Moreover, it is the optimal tool for collaboration between authorities and the developer.

(Anders Nilsson)
After the assessment process with BREEAM Communities, according to Anna Barosen (2014.05.15), the score in BREEAM Communities for Masthusen was finally 57.5% which corresponds to “Very Good” and it is the same score for the whole area.

Process of Assessment and Development

As it would be described below, the BREEAM Communities criteria defined and influenced significantly issues related to urban design in order to adjust them in more sustainable patterns.

2010 was the launch of Masthusen, which is a large development that includes eighteen new neighbourhood blocks with offices, housing, trade and services (Diligentia, 2010). The main goal according to Diligentia developers, of using the BREEAM Communities scheme, is to create an accessible and open part in the Western Harbour. Apart from housing, offices and services it will include restaurants, activities and spaces for recreational activities in order to become a vibrant district (Diligentia, 2010c). Accessibility from and to Masthusen was and will be enhanced by a well-connected transport system. The region is served by bus lines and there is also a long-term plan for a tram line between Western Harbour and Rosengård/Lindängen as well as connections to the surroundings such as Skåne, Kastrup and Copenhagen (Malmö stad, 2008; Diligentia, 2010c).

According to Diligentia (2010a), the use of BREEAM Communities for Masthusen had significant results both in case of community as a whole and in separate buildings in the area. For instance, regarding the ratings from BREEAM, there is a new office building, the Masttorget 6 which houses the Swedish Enforcement Authority, Cymko, Softronic, Previa and Diligentia that has reached Excellent rating, with 77.71%, which is the highest points awarded to a Swedish project (Diligentia, 2010a).

A “Safety Program for Masthusen” – Vårdeprogrammet – was developed in order to achieve a consensus and an efficient collaboration between the city of Malmö and Diligentia concerning the design of Masthusen (Malmö stad, 2011). Moreover, in the “Safety Program” was stated as its main purpose according to Malmö stad (2011), “to create a common overall picture and vision and to simplify the subsequent planning work”. The “Safety Program”, as it is described by Malmö stad (2012) and the other developers, sets the direction for Masthusen development using a value-based planning process, a model which is developed in cooperation between the City Planning in Malmö and White Architects AB and in accordance to BREEAM Communities scheme, trying to ensure quality and durability over time.

By developing such a model, they invested in a long-term value structure rather than a physical structure which usually is so strict that it does not allow flexibility in a long-term perspective (Malmö stad, 2012). Arguing for this value-based plan, Malmö stad (2012) referred to a flexible content which can change and vary according to the different needs and circumstances over time. Furthermore, according to the “Safety Program” the plan was developed in such a way to enable frequent monitoring of the processes during the detail planning stage and provide feedback on sustainability and the continuous urban development (Malmö stad, 2012).

Regarding the “Safety Plan” and the development of the area, there were created and followed criteria that will enhance a more sustainable development for Masthusen and at the same time they will affect significantly the master-plan and the final image of the area. In order to have a further insight on how urban design is affected during this process they are also referred the characteristics and the issues that will affect this aspect (see Appendix p. 86 ; Box: Safety Plan for Masthusen).

The value-based urban development model was built based on six main elements (see Fig. 6.2.4): the Core, the Vision, Values and Strategies, the Strategic projects and tools and the follow-up process. Each one of them includes a number of issues that will be developed and affected or will be used as tools for the development of the area.

Each of these elements includes guidelines specific for the development of Masthusen that refer to many development aspects including design characteristics as well. The main goal of this “Safety Program” is to define the development of the area based on its central location aiming to the creation of an important node. In order to achieve this the masterplan was influenced and developed based on design principles such as good connections, accessible, safe and attractive streets, open public spaces and urban greenery, mix of uses and attractive design of all the spaces (Malmö stad, 2011).
Moreover, regarding the architecture of the area, as Anna Barosen (2014.05.15) said, without having challenges such as existing building types and existing architectural characteristics to retain, the developers and architects starting to design from the beginning the area.

In order to ensure that the goals described in the “Safety Program” will be achieved, the master-plan of the area should be tested in very different stages of the design process in order to cover all the aspects regarding sustainability, mixed-uses, attractive public spaces and attractive buildings etc.

**BREEAM Communities orientation to sustainable urban development and urban design**

Below, there is a presentation of the main tools and characteristics that are directly related to the urban design process and the architecture of the new district.

BREEAM Communities, as it is already referred above, is the scheme chosen in order to assess the planning and design of Masthusen’s development. BREEAM Communities as an international certification for sustainable construction and planning, ensures all the aspects of sustainability: ecological, social and economic. Moreover, according to Malmö stad (2011), the selected scheme was chosen in order to secure the good and efficient collaboration between all involved parties and for sustainability thinking and practices to characterize the whole process.

According to the development authorities, this requires additional focus early in the planning process in order to guide the design and planning process in accordance to BREEAM Communities scheme. In different stages of the development, Masthusen will be assessed by BREEAM Communities according to the requirements and how well Masthusen live up to these.

The urban design related aspects within the “Safety Plan” were influenced and based on criteria coming from BREEAM Communities. As it is described above, in the chapter referring to BREEAM Communities and Urban Design (see Chapter. 5), the urban design related criteria have an important influence in the final rating coming from BREEAM Communities, varying according to the choices and the issues they choose to work on, the urban planners and designers. For instance, according to Anna Barosen (2014.05.15), when they decided to use the manual, some issues could not be affected or changed because it can be too late since some of the design phase has started much earlier. If for example, there are already existing buildings in the area and you have to relate to those, it is kind of difficult to follow all the criteria from the manual. Additionally to this approach, Anders Nilsson (2014.05.21) from a more architectural point of view described the procedure as follows:

> Of course, if you really want to reach excellent rating you have to make a lot of effort to design quality spaces, variety of spaces, small distances, large amount of green areas etc. There is a lot of things you need to do and add to the masterplan compared to a situation where tools like BREEAM are not integrated in the process. The architects have to design again and again and make continuous changes to develop the masterplan.

Moreover, for the case of Masthusen, continued by saying:

![Figure 6.2.4. Model for value-based urban development. Source: Malmö stad, 2011.](image)
Until now we have three parks but we need to have six. So, we have to work on the masterplan again. However, sometimes we need to compromise according to our goals and to the situation we have to deal with. For instance, we agreed to compromise and take 2 credits instead of 4 and avoid to make further changes if we believe that we are already working on the right way.

(Anders Nilsson)

One issue that BREEAM Communities brings up is related to the identity of the place and how this affects the design process. “Place Shaping” is the criterion that BREEAM Communities uses in order to give value on the area’s distinct identity (BREEAM Communities, 2012). Another aspect in BREEAM Communities refers to the transportation issue and facilities. On the transport side values, the BREEAM Communities includes transfer opportunities in the field with major emphasis on pedestrian options that takes into account how well the area creates opportunities for business and quality service for the residents and workers in the district (Malmö stad, 2011). BREEAM Communities also evaluates if the planners and designers managed to create “a lively area that feels integrated with the surrounding areas” (Malmö stad, 2011). As Malmö stad (2011) stated early in the planning process, “In Masthusen we want to create a dense structure where a high density gives opportunity to share the established infrastructure such as technical supply, roads and public transport. It gives both cost effective and smart solutions with swarming public places and streets. The feeling of love to stroll or bicycle instead of taking the car increases if it is felt safe”.

Regarding the design process, the main aim is the architecture to be well-conceived and flows of people and traffic to exist in an obvious and natural way. Moreover, Malmö stad (2011) in accordance to BREEAM Communities criteria, presents as of major importance the balance between flexible and customized buildings to meet the future changes and attract different types of activities and people both in short and long term perspective. More specifically, according to the design process “the architecture is of high quality with durable materials that ages naturally and beautifully and the buildings have a positive impact on both the surrounding environment and the people want to stay there” (Malmö stad, 2011).

Another important feature regarding the urban design aspect is related to the movement throughout the area. For that reason, an example is Diagonal, a part of the design process regarding the organisation and design of the routes. Diagonal consists of various interconnected routes that form movements within and through Masthusen and also enhances the connection of the area to the rest of Western Harbour (see Fig. 6.2.5) (Malmö stad, 2011). Diagonal will be transformed into an intense and active area with numerous businesses on the ground floor and residences that will provide activity in the area during all day (Malmö stad, 2011). The buildings along the Diagonal are lower in order to create an intimate feeling closer to the human scale.

According to the BREEAM Communities scheme, the level of detail during the design process should be high in order to give a clear view of the process. Therefore, it is important to prepare these plans and designs in early stages in order to give the opportunity for optimization in future. Apart from the design of buildings, it is important to prepare detailed plans for the green spaces between the block structures that serve as green lungs for the area (Malmö stad, 2011).

Developers’ Perspectives

The City of Malmö, Diligentia and the BREEAM’s assessors are working on Masthusen and Western Harbour, in order to achieve a high-standard development oriented to sustainable patterns regarding also the urban design. White Arkitekter were hired as the assessors to make the sustainability certification for Masthusen on behalf of BRE and Diligentia and afterwards they worked together in order to develop the basis for certification (White Arkitekter, 2014).

The BREEAM Communities scheme was developed in a British context, therefore, as a first step there was a pre-assessment of the sustainability issues that were of major concern to the developers in order to adapt the core data to Swedish context through a number of workshops with government agencies, property owners and local residents (White Arkitekter, 2014). Moreover, according to Anna Barosen (2014.05.15), Diligentia uses the English manual that it is “adjusted and adapted not only in Swedish circumstances but also in the
circumstances regarding Malmö in specific” . Hence, White Arkitekter developed a comprehensive set of guidelines and at the same time integrated them in Malmö City’s environmental objectives and requirements (WSP Group, 2012). For instance, regarding the urban design aspect, the developers in order to adapt the criteria of BREEAM Communities in the Swedish context stated: “For example, even the 80% of the buildings that will not have solar energy installed must be designed so that panels can be fitted in future, taking into account their weight and the angle of the roof” and “All the public spaces must be accessible to everyone regardless of any disabilities, and there will be green walls and green roofs throughout so that people that are walking through or living in the area immediately can feel the difference” (WSP Group, 2012).

Sustainability is not treated by the developers as a single, independent goal but as a feature which penetrates to all strategies and plans (Malmö stad, 2008). There are issues that must be treated which interact with all the aspects of sustainability: economic, social and environmental, like for example in urban design part, the transportation issue and the type of buildings and other uses designed for the area. For instance, in the case of Masthusen, there is a focus on vehicle free transport solutions which reduces the burden to the environment but at the same time affects all the aspect of sustainability to a better way (see Fig. 6.2.6).

Moreover, based on the Comprehensive Plan for Malmö, created on 2011, with overarching objective to become Malmö an attractive and sustainable city, the environmental goals defined as: reduced emissions of greenhouse gases, sustainable use of natural resources and Malmö to be based completely on renewable energy by the year 2030 (Malmö City Planning Office, 2011).

Regarding the processes that were followed during the development of the area and according to BREEAM Communities British scheme, there were noticed some differences because of the dissimilarities between the British and the Swedish planning context. One significant difference regarding the process that was brought up by Anna Barosen (2014.05.15) refers to consultation and participation issues. In Sweden as Anna Barosen (2014.05.15) said:

There is not like inviting-asking people process since people are allowed to say what they think when they will be informed for a project in an exhibition that usually lasts for about three to six weeks. During that period people can come and write down in a letter what they think and send it and these letters will be read and handled properly by the developers. This process which seems really democratic is included by law in Sweden while in England there is not something similar to that.

(Anna Barosen)

Finally, in the BREEAM Communities scheme there is one last category regarding “Innovation”, with no mandatory demands from the scheme, but it offers a great number of credits. Anna Barosen (2014.05.15) when was asked for this issue stated that she cannot say that they have not applied for these credits that count as innovative such as new technologies but she pointed out that what can be considered as innovative in that case, refers to the way of working. Although the workload was much bigger than it would have been without the use of BREEAM Communities, the fact that they had to set a wide range of issues before they started the planning process, including much talking, organisation and consultation, was somehow innovative. Moreover, it is a very challenging project, since Diligentia took a great risk and as Anna Barosen (2014.05.15) stated:

Using first BREEAM Communities scheme in Sweden, we have to ensure also that everything needs to be worth it economically too.

(Anna Barosen)
Kabeln, Sundbyberg

The area

Kabeln is a development area in Sundbyberg municipality, in Stockholm County. Sundbyberg is an area located just outside Stockholm city centre and it is characterised by its dense urban centre. This area is divided by the railway in two different parts; in the north part of the railroad the area’s conditions favoured the formation of an urban area with commercial activity while the south part was influenced by the industries developed in late 1800’s (Sundbybergs Stad, 2013). In this side the industries together with the office properties formed a separate district in Sundbyberg, called Kabeln (see Fig. 6.2.7).

Based on the rapid expansion of Sundbyberg municipality, it was developed a vision for 2020 which identifies the planning area “as the location for possible exploitation” and states that “the central location close to public transportation makes the area attractive for residences and workplaces” (Sundbybergs Stad, 2013a).

Regarding Kabeln district, the development opportunity came up with the idea of the burial of the railroad (Sundbybergs Stad, 2013a). Based on the interview with Anna Barosen (2014.05.15), the decision regarding the burial of the railroad was crucial because depending on this decision the prerequisites for the area would be completely different and therefore, no plans could be made until this decision, which will consist a huge project. Moreover, one month ago (April 2014), according to Anna Barosen (2014.05.15), they decided to make the railway underground, hence the planning started and until now Diligentia is working with the first step of BREEAM Communities scheme 2012, while at the same time they are conducting a lot of feasibility studies to prepare the area however the main goals are not being set yet.

Kabeln is partly cut off from its surroundings not only because of the railroad but also because of the way the buildings are located in the area. There are high-contiguous brick buildings that are oriented in the centre of the area, turning their backs to the railway and Sundbyberg’s centre (Sundbybergs Stad, 2013). As Anna Barosen (2014.05.15) described it, there are some beautiful old buildings in the area marked as important to keep and do not touch the façade. Specifically, the area Kabeln was built up with two older industrial buildings and an office building from the 1980s, while in the north-west corner of the neighbourhood it is located Max Sievert’s old telephone cable factory (TKF) which was built in 1911-1917 (Sundbybergs Stad, 2013; Diligentia, 2012). Together with TFK there are some few other industrial buildings some of them turned to office buildings because they were not allowed to be demolished during the development of the area (Sundbybergs Stad, 2013).

Kabeln district has a characteristic triangular shape, surrounded by the Railroad, Löfströms avenue and...
Esplanad, which is the only street that connects it with the city centre over the Railroad (see Fig. 6.2.8) (Sundbybergs Stad, 2013). One important aspect regarding the new plan of the area is to develop strong connections with Sundbyberg. The growth of the surrounding avenues as well as the expansion of the cross streets that go through the area, will become important links to the Sundbyberg centre (Sundbybergs Stad, 2013). One of the most important links according to Sundbyberg Stad (2013) will be the avenue Annedal which will expand creating a connection between Sundbyberg centre and Stockholm.

Regarding the open spaces in the area, a large amount is occupied by parking lots because of the office buildings located in the area and therefore, the biggest part of open spaces consists of asphalt surfaces (Sundbybergs Stad, 2013). The only green space in the area is a small triangular park located in its north end (Sundbybergs Stad, 2013). However, this park is considered a very important part of the walkway because of its significant location since it acts as the forefront to the area from the northwest, located between the centre and Annedal avenue (Sundbybergs Stad, 2013). Other green spaces around the neighbourhood form a promenade along the waterfront in Bällstaån avenue and on the north-west side the Maraboupark with an art gallery and restaurants (see Fig. 6.2.9) (Sundbybergs Stad, 2013).

![Figure 6.2.8. Kabeln district. Source: Sundbybergs Stad, 2013.](image)

![Figure 6.2.9. Development Program Kv. Cable, November 2013. The grey buildings are the existing and the pink the proposed new buildings. Source: Sundbybergs Stad, 2013.](image)
The main aim of this development is to make Kabeln a mixed-use area. As Anna Barosen (2014.05.15) characteristically referred:

Kabeln’s very good situation with this great variety of transport modes – trains, subway, metro, buses, tram - gives a very good opportunity for the development of a mixed-use area which a few years ago was only the back side of Sundbyberg, scary and dark with no life on streets; even more, the biggest aim because of the good connections is to make Kabeln, part of the city with offices, residential buildings and retail in the bottom floors.

(Anna Barosen)

**BREEAM Communities for Kabeln**

The crucial aspect regarding Kabeln district is that its development is set to follow clear sustainability standards and an environmental profile. This should become obvious through its buildings and their surrounding environment in order to create daily awareness (Sundbybergs Stad, 2013). In order to achieve this, the development will be based on BREEAM Communities scheme. For the case of Kabeln, will be used the newer version of BREEAM Communities scheme, compared to Masthusen case. According to Anna Barosen (2014.05.15), after Masthusen, both BRE and Diligentia were much more experienced regarding the use of the scheme in a Swedish context that facilitated a lot the initial processes. Moreover the development of HCS project (see p. 10) developed in Sweden, supported the whole procedure.

As it is referred above, the plan is to make the neighbourhood and gradually the larger area, BREEAM certified (Sundbybergs Stad, 2013a). Working on issues of sustainability, increases the property’s environmental performance while sets the foundation for sustainable development (Sundbybergs Stad, 2013a). Moreover, during the examination stage it will be conducted the identification of the environmental classification of all buildings within the planning area (Sundbybergs Stad, 2013a).

Although the BREEAM Communities checklist covers a wide range of criteria and issues related to urban design, according to Anna Barosen (2014.05.15) there are restrictions or issues that cannot be covered or adjusted in each case. For instance there are criteria in the category “Transport and movement” that define the distances from buildings’ entrances to a transport node and they are very strict regarding the rating (see Table 6.2.1).

<table>
<thead>
<tr>
<th>Access to public transport</th>
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<td><strong>One to four credits</strong></td>
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<td>The distance from each building entrance to a compliant transport node must be via a safe and convenient pedestrian route and between the following distances:</td>
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<tr>
<td>Credits</td>
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Table 6.2.1. BREEAM Communities checklist | Category: Transport and Movement. Source: BREEAM Communities, 2012

For the case of Kabeln, as Anna Barosen (2014.05.15) said:

Even though Kabeln is very close to the big station where we have all transport modes because this distance is a bit more far than what BREEAM Communities demands you get zero credits. But if you have only one bus station close, then you get many credits. So even if we have all the means of transport since we do not fulfil the standards we cannot get the credits for this category, which is kind of restricted and unfair.

(Anna Barosen)
Process of Assessment and Development

In order to have a further insight on how urban design is affected during this process they are referred the characteristics and the issues related to this aspect.

The main purpose of this development is to integrate Kabeln district to Sundbyberg city centre accompanied by all its services and communications (Sundbybergs Stad, 2013). As it is referred above, in order to achieve this integration, are required new streets and extension of the existing streets and crucial changes in the structure of the area. Moreover, it is of significant importance to change the character of the surrounding streets and areas in order to obtain a more urban character in general (Sundbybergs Stad, 2013). Features like lighting, signage, paved surfaces green spaces and trees along central avenues can give a different nuance in the area.

As it is stated in the plan document developed by Sundbyberg planning office, “The overall vision is to create a both coherent and diversified environment, a new city quarter based on mixed features with the background of an industrial area” (Sundbybergs Stad, 2013).

The architectural principles will be based on the former industrial character of the area and its architecture, though the scale of the buildings will vary between two and sixteen floors as well as the materials and the colours depending on the uses that they will host (Sundbybergs Stad, 2013). Notwithstanding, the character of the district will eventually turned to a traditional urban structure with buildings with private farms and areas with communal farms (Sundbybergs Stad, 2013).

As it is described by the Sundbyberg Stad (2013), the main public spaces, like the expanded connections between Railway Square towards Marabouparken and Annedal avenue, will be transformed to livable places with footpaths and cycle routes which will be accessible, safe and populated during both day and night while along these there will be places with different types of uses.

Regarding the architecture of the surrounding buildings, crucial changes should be done according to Sundbyberg Stad (2013), in order to obtain a more interesting and vital character compared to the monotonous character of the existing. Therefore, the new buildings should have a greater variation in height and materials according to the different kind of uses and activities but at the same time to give a coherent identity to the area, respecting also its industrial background (Sundbybergs Stad, 2013).

“New buildings and the external environment will have a robust elegance and distinct materiality” (Sundbybergs Stad, 2013).

BREEAM Communities orientation to sustainable urban development and urban design

The main characteristics regarding the urban design of the area were formed in accordance to BREEAM Communities criteria. According to BREEAM Communities, the area should be designed in a way that will make it “welcoming, safe, available and inspiring” (Sundbybergs Stad, 2013).

As it is stated by the Sundbyberg Stad (2013), the developing area should be welcoming and designed to be an open area for everyone with a variety of public, semi-public and private spaces. Moreover, places and streets will be well-designed and arranged in a way that will support various activities like recreation and meetings.

Examples of Sustainable urban development

Heat

The buildings will be designed so that the energy supply can meet the highest possible energy efficiency. It is also proposed for the area to be connected to the district heating network.

Stormwater

A stormwater investigation has been prepared. The local disposal of surface water (LOD) should as far as possible be arranged according to city guidelines. To achieve a reduction in runoff to Ballsta and whenever possible keep up the groundwater to prevent subsidence recommended infiltration in the aggregate overlying clay where this is possible. On occasions when infiltration capacity is exceeded, stormwater brim to the existing pipeline in the street. Today, the land is mostly paved and stormwater is led to the municipal network. After the expansion of Kabeln, stormwater issues planned to be solved in a system with multiple steps. Hard -made surfaces within blocks of land will be partially higher so that the water runs into the so called rain- gardens in sequences follow the walkway. These surfaces are planted with plants that can tolerate drought as well as heavy rainfall. This delays and filters water that will be taken up by plants and evaporates. Rain -garden fitted with overflow so that surplus can be directed to the municipal stormwater system. Regarding housing estates, on the roof the stormwater will be delayed through planting surfaces and along the streets, new trees will be planted (Sundbybergs Stad. 2013a, my translation).
An important criterion regarding BREEAM Communities scheme is the design of a safe neighbourhood for its residents during day and night. In order to achieve this aim, features like good outdoor lighting, open sight lines, clear entrances and proximity to major roads and communications should be established in order to ensure the feeling of security (Sundbybergs Stad, 2013). Moreover, as Sundbyberg Stad (2013) claims, the plan regarding the mixed-use development would enhance this feeling as long as having also local services and housing except for offices, the area will be populated during all hours. Furthermore, pedestrian and bicycle paths, access roads, entrances and landing points are included in the design plans aiming to transform Kabeln district to an open and accessible area, available to all, as it is described by the Sundbyberg stad (2013).

Finally regarding the term inspiring, it could be translated for the urban design as a mix of older and newer buildings, hosting houses, offices and services combined with a varied and of high quality outdoor environment (Sundbybergs Stad, 2013).

In order to achieve the above, the area will be developed to obtain a more urban character and therefore, three new neighbourhoods will be built (Sundbybergs Stad, 2014). As it is planned, the block will contain up to 370 new residences, offices and spaces for other facilities and activities as well as regarding the outdoor environment, an attractive route will be created from Vasagatan to Marabou park and Annedal avenue in order to strengthen the connection between Sundbyberg centre and Annedal, along which there will be shops, cafes and other recreation activities (Sundbybergs Stad, 2014). Specifically, according to Sundbyberg stad (2013a), the developments in Annedal will help to increase the flow through the neighbourhood Kabeln, giving at the same time the chance to include trade and opportunities to redesign the public spaces.

Another issue regarding the development of this area is the zoning since some measures should be taken for the creation of a protective barrier between the planning area and the railroad. Although the risk level is considered low, a safety distance of 25 meters should be provided between buildings and the railway (Sundbybergs Stad, 2014). Even more, according to Sundbyberg stad (2014), another option is that the areas between the railroad and the buildings should be designed in a way that they will not encourage permanent residence.

Developers’ Perspectives

Currently, the project is in the planning phase but it moves rapidly based mainly on the collaboration of Sundbyberg City, Diligentia, 2BK Arkitekter and BREEAM Communities assessors.

The vision of the developers is to transform Kabeln district into an urban and sustainable neighbourhood with housing, local services and a mixture of jobs (Diligentia, 2012). As it is characteristically stated in the development plan “It will be an area where people will proudly work in, live in, passing through or visiting it” (Sundbybergs Stad, 2013, my translation; Stockholm & Projekt, 2012).

The developers based on BREEAM Communities 2012 scheme, are working on plans that will preserve the cultural history of the area and at the same time they will bring to the area a new way of thinking, shown in its architecture (Diligentia, 2012; Stockholm & Projekt, 2012).

For this project, Sundbyberg City, Diligentia, 2BK Arkitekter and BRE BREEAM Communities will be in close collaboration in order to plan and assess how a new residential and commercial area can achieve a good overall environment for its users (Diligentia, 2014). An additional value that the use of BREEAM Communities scheme will offer to the project, according to the developers, is its market value as long as certification increases the value of the whole area attracting more people that will want to live, work and shop there (Diligentia, 2014; Fastighets, 2011).

Regarding the planning stages, on 24 October 2011, the City Council gave instructions to City Planning and Environment to begin the detailed planning for the development of Kabeln district (Sundbybergs Stad, 2014). Afterwards, between December 2013 and January 2014 they were working on the examination-review stage, which is the last opportunity to comment on the proposal and make crucial changes. After that stage, the proposal will be developed further and adapt on the submitted comments, passing through the next stage which is the adoption (Sundbybergs Stad, 2014) (see Fig. 6.2.10).
However, on May 2, 2011 the Planning and Building Act changed and since the plans started after May 2011, they were in accordance with the new Planning and Building Act (PBL 2010:900) (Sundbybergs Stad, 2013a).

The most important document for the planning and design process is the detail plan which consists of a plan - map with all the relevant regulations and the plan description includes implementation details as well, based on needs assessment, noise calculations, geotechnical details, stormwater and traffic investigation etc. (Sundbybergs Stad, 2013a). In order to complete this detail plan, a risk analysis and a soil testing implemented and then after the examination stage, the design principles were specified in more detail and added to the plan (Sundbybergs Stad, 2013a).

In general, the action plan conducted by the close collaboration of all the developers will be in accordance to the public interest appropriate use of land and water resources and in consistence with the Environmental Code and the objectives of Sundbyberg’s environmental policy (Sundbybergs Stad, 2013a).

Screening is a very important stage in a development project and according to this procedure, the action plan is not expected to have significant environmental impacts since it is based on the criteria of Annex 4 of the Ordinance (1998:905) on Environmental Impact Assessment (EIA). Furthermore, the plan is not expected to have negative environmental impacts and negative consequences for the climate. Notwithstanding, the construction phase will create various disturbances (noise pollution, air pollution from dust etc.) and for that reason according to the action plan guidelines for these works will be set from the beginning in collaboration with the BREEAM Communities assessors (Sundbybergs Stad, 2013a).

**The EIA Directive in Sweden embodies the preventive approach to environmental protection by requiring that before consent is given by a governmental body, development projects likely to have significant effects on the environment, are subjected to an assessment of possible environmental impacts (Milieu_Environmental Law & Policy, 2007).**

Figure 6.2.10. Stages in the planning process for Kabeln district. Source: my design translated from Sundbybergs Stad. 2013a.
Royal Seaport, Stockholm

The area

Stockholm region faces the challenges and opportunities that globalisation opens up for it as well as the opening up and trade expanding of new markets, while other regions become also competitive for increasing business start-ups, investments, relocations and visitors (Stockholms Stad, 2012). In order to cope with this rapid pace and international competition, Stockholm needs to make major investments in various areas. One of them is the Stockholm Royal Seaport that extends from Husarviken in the north to Loudden in the south, including Hjorthagen, Värtahamnen and Frihamnen and all with different prerequisites (see Fig. 6.2.11) (Stockholms Stad, 2012; The Walkable City, 2010).

The Stockholm Royal Seaport - Norra Djurgårdsstaden is a new major project regarding the urban development of the north-eastern part of the city of Stockholm, adjacent to Frihamnen docks and the nearby residential areas and green spaces (Stockholms Stad, 2012a).

Stockholm Royal Seaport is a significant part of the city’s vision of a world-class Stockholm by 2030, according to The Walkable City- Stockholm’s City Plan, which sets out the strategies for a more cohesive and accessible Stockholm in the future (Stockholms Stad, 2012b). According to the Walkable City (2010), in the future, there must be a shared vision for the urban development areas, which will be “of high-density, attractive, mixed-use neighbourhoods with high quality buildings and public spaces”. The main aim, as it is described in Stockholm’s City Plan – The Walkable City (2010) is to link these harbour areas such as Stockholm Royal Seaport, Hammarby Sjöstad and Liljeholmen/Lövholmen with the rest of the inner city and for doing so “sustainable urban development and eco-efficient solutions are considered essential”.

According to Ulf Ranhagen (2014.06.13):

In Stockholm city, there is a strategy of reusing former industrial harbour areas for new mixed-use developments. Hammarby Sjöstad was the first and there is a number of other
cases developed or under-development too, such as Liljeholmen/Lövholmen. This can be considered as part of Stockholm’s strategy to develop this ring of different development, surrounding the city.

For the case of Stockholm Royal Seaport, Ulf Ranhagen (2014.06.13) stated:

It has a very strategic location, regarding the connections to public transport, having for instance Ropsten, which is the terminal station for the eastern part of Stockholm Metro system and for the railway, covering the area of Lidingö and also it has a very good location in connection to the existing city and to the eco-park (Royal National City Park–Kungliga nationalstadsparken). So, this area has all the qualities concentrated being close to green areas, existing city and transportation.

(Ulf Ranhagen)

Even more, the area of development according to Stefan Modig (2014.06.23):

It is a fantastic area with the sea contact, which is one of the major qualities together with the national park which surrounds the area. So, the natural surroundings is the best thing for this place. Moreover, it is very close to central Stockholm and you can easily use the subway and all the infrastructure that is already there, even the power supply in the area. Therefore, there are very good possibilities to develop this area and it offers the alternative to build that same amount of housing and offices outside the city that will need a lot of new investments and taking unused areas also.

(Stefan Modig)

Therefore, because of its favourable location and its good connections to the surroundings (see Fig. 6.2.12), as it is described by Ulf Ranhagen and Stefan Modig, regarding its proximity to business and shopping centres, vast nature and areas of open water, it considered to be one of Stockholm’s prime locations. Hence, in its environmental programme 2008-2011, Stockholm City Council decided that this area should be developed based on a distinctive environmental profile (Stockholms Stad, 2012). Moreover, through this development project as it is stated in the document regarding the vision for Stockholm Royal Seaport: “it will not only consolidate Stockholm’s position as a leading capital city in climate work, but it will also support the marketing of Swedish environmental technology and contribute to the development of new technology, benefiting all housing construction in Sweden” (Stockholms Stad, 2012).

Furthermore, the strategic position of Stockholm in Baltic, centrally located in the growing Baltic region, will give the opportunity to become a key port which will increase the number of ferry and cruise operators.
According to Ulf Ranhagen (2014.06.13) the ferry will be kept in order to be used for personal transit, in the Baltic sea to Finland and other countries, since it is not considered to be so environmentally disturbing and even for the noise problems which it will cause there will be a project in collaboration with the national agency of planning for noise pollution. Therefore, an appropriate development of the district will increase the attractiveness of Stockholm and consequently, the number of visitors who will contribute significantly to Stockholm’s tourist industry (Stockholms Stad, 2012).

When the project will be finished by 2025-2030, there will be in total 10,000 homes and 30,000 workplaces in the area (Stockholms Stad, 2012a) including a variety of activities and jobs from port-related operations to financial services, media and start-ups and relocations within the service and cultural sectors (Stockholms Stad, 2012).

Process of Assessment and Development

Stockholm Royal Seaport is designed to be a new eco-profiled city district that according to The Walkable City-Stockholm’s City Plan (2010) will develop even more the traditional ways of planning and construction. Hammarby Sjöstad – the waterfront development in Stockholm - was a forerunner in sustainable urban development for other projects such as Stockholm Royal Seaport -Norra Djurgårdsstaden and Västra Liljeholmen/Lövholmen, but its design is based on ideas, knowledge and technology of the 1990s (Carlsson-Mård, 2013). Therefore, Stockholm Royal Seaport as a newer eco-profiled city district will be based on the experience gained in the past and it will elaborate even further the sustainability concept (Carlsson-Mård, 2013).

As it is described by Ulf Ranhagen (2014.06.13), except for its strategic location, another reason that this area is chosen as an environmental profiling area in Stockholm is to make a further and upgraded development compared to Hammarby Sjöstad, for instance, by setting stronger goals, stronger objective for reducing carbon dioxide (CO₂) and in general to make an upgraded model city district compared to Hammarby model.

As it is described in Walkable City (2010), for the case of Stockholm Royal Seaport “the focus will be on energy-use, transport, climate friendly living, the eco-cycle (see Box: Eco-Cycle Model 2.0) and lifestyle issues that will contribute to make this neighbourhood fossil fuel free by 2030”.

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**Eco-Cycle Model 2.0**

The Eco-Cycle model was initially used in order to support a more sustainable development for Hammarby Sjöstad, in Stockholm. For that case, it was designed the Hammarby Model, in order to be totally adjusted in the conditions and needs of this project.

Eco-Cycle Model 2.0 can be considered as an upgrade of this model, which is one of the projects in the city of Stockholm that is developed in order to contribute to making the Stockholm Royal Seaport a world-class environmental profiling urban area and for that reason has been granted economic support from the Swedish Delegation of Sustainable Cities (Ranhagen & Frostell, 2014).

The main idea for the development of the eco-cycle model is to “contribute to drawing attention to and explaining important connections and synergies between resource flows. Secondary objectives can be fulfilled after supplementing the development work are: to be a tool for monitoring and follow-up of environmental objectives, to serve as a dynamic tool for analysis of resource flows and to be more comprehensive” (see Fig. 6.2.13) (Ranhagen & Frostell, 2014).

The Eco-Cycle Model 2.0, is not only a general map of functions and flows as the Hammarby Model. According to Ranhagen & Frostell (2014) there are 4 different levels on which a line of arguments is built:

- Level 0 Established theories and concepts for sustainable societal and urban development constituting the basis of the eco-cycle model
- Level 1 Anchoring of the eco-cycle model in a more comprehensive sustainability concept
- Level 2 General Map of functions and flows related to the eco-cycle model including optional systems solutions both within and outside the city district (outside the defined systems boundary). Conceptual future image for 2030 with a perspective towards 2050.
- Level 3 Resource flow analysis related to accounting systems for energy, material and water eco-cycles.
According to the plan for the project, the Stockholm Royal Seaport area will be developed with the characteristics and density of an inner-city neighbourhood, with a broad mixture of residences, amenities, businesses and strategic infrastructure and port traffic (The Walkable City, 2010; Stockholms Stad, 2012a).

Regarding the planning stages, as it is stated by Stefan Modig (2014.06.23), it is a complex activity since they need to work on different plans for different parts of the area as long as they are working and designing the area having it divided in smaller parts. In the first parts, the people have already moved in and they are fully established but there are also parts that they haven’t even started to figure out and they only have the first sketches, because it is a huge area to develop.

The building work in the area began in spring 2011 and in late 2012 moved the first new residents (Stockholms Stad, 2012b). The first phase was Hjorthagen, where they were planned to be built about 5,000 residences (Stockholms Stad, 2012a) and by about 2020, construction work will reach the quayside at Ropsten, where they will have been built over 6,000 residences while at Hjorthagen will have been built 15,000 new residences.

Regarding design details for the developing areas, the buildings’ height along the waterfront will vary between three and seven floors while the buildings in Hjorthagsberget and on the Lilla Värtan shoreline can be higher (Stockholms Stad, 2012b). The area will be developed with semi-open blocks oriented to the water and the Royal National City Park - Kungliga nationalstadsparken (Stockholms Stad, 2012b). Moreover, regarding design details, such as architecture, colour and choice of materials for the new buildings, they will be based and inspired by the nature, the existing architecture of the surrounding area and the former industrial character of the area (Stockholms Stad, 2012b).

Apart from the construction of new buildings, of major importance is also the design of open- public spaces which will be easy accessible for all, for relaxation, recreation and sport activities. Public spaces, according to the plans will include parks, squares, shoreline walks and a marina (Stockholms Stad, 2012b).

An important part of the developing area, remained from its previous industrial activities, are the buildings for gas production. These buildings were designed by Ferdinand Boberg in the late nineteenth century and the production in the gasworks area ceased in January 2011; according to the plan, the buildings will take on a different character and they will be transformed in order to host activities related to culture, education and retail (Stockholms Stad, 2012b) (see Fig. 6.2.14).
The development will be sited in former industrial areas and specifically areas used for gas production (Stockholms Stad, 2012b). In order to release valuable land for the development, container and oil handling will be moved in other areas and the port’s operations will be concentrated on the piers (Stockholms Stad, 2012b).

The aim of this urban development is through its design and the diversity of architecture and lifestyles to set the foundations for those living and working there to take the initiative for a responsible lifestyle and good social relationships (Stockholms Stad, 2012).

Stockholm City Council formatted a very clear vision for Stockholm Royal Seaport, setting three generic targets:

1. “By 2020 carbon dioxide emissions will be less than 1.5 tonnes per person comparing to the Swedish average of 4.5 tonnes per person.

2. Stockholm Royal Seaport will be adapted to future climate change.

3. By 2030 Stockholm Royal Seaport will be fossil fuel - free, while the same target for the whole city has been set for 2050” (Stockholms Stad, 2012; The Walkable City, 2010).

In order to achieve these targets, major efforts will be made regarding some specific areas as it is already referred above; energy use, adaptation to climate change, environmentally efficient transport, cycles and cyclical models at system level and lifestyle issues will be the main areas of focus regarding this development (Stockholms Stad, 2012).

Moreover, the project is supported by a worldwide programme the Climate Positive Development Program (CPDP) which was launched in May 2009 and it is a joint initiative of the Clinton Climate Initiative and the US Green Building Council (Stockholms Stad, 2012; Climate+, 2013). The CPDP was created in order to meet “the pressing dual challenges of rapid urbanization and climate change” and its goal is “to create a model for large-scale development communities that reduces greenhouse gasses and serves as urban laboratories for cities seeking to grow in environmentally sustainable and economically viable ways” (Clinton Foundation, n.d.; Climate+, 2013).

Apart from this tool, it was developed specifically for this project a follow up process. According to Stefan Modig (2014.06.23):
It is a very ambitious process that they use in several stages of the development; at the early stage of the process and then when the drawings for the building permits are ready you need to make the follow up and again after 2-5 years when the buildings have been in use and function regularly.

(Stefan Modig)

Stefan Modig (2014.06.23), during our interview, pointed out many times the importance of the follow-up process that was developed specifically for this project and it was an upgrade of the Hammarby model.

Regarding the accessibility of the area, all its communications will be improved by Norra länken (E20 European motorway), the future city tram line, which links Ropsten and the port area and the extention of Östlig förbindelse, the eastern section of the Stockholm ring road (Stockholms Stad, 2012). Moreover, as it is referred above, several public transportation connections such as subway, buses, trams and ferry lines are also planned and in addition, attractive bike and walking tracks will be prepared (Stockholms Stad, 2012). However, traffic planning primarily prioritises walking and cycling, then public transport and car sharing and as a last solution the private cars (Stockholms Stad, 2012b). The important part regarding this options is to make it easy choose between different means of transport, therefore, there will be a convenient number of bicycles for hiring, 2.2 bicycles per household, as well as bike-parking facilities and many sites for car share schemes, while parking for residents will be provided in garages underneath apartment blocks, and a lower number of parking spaces for offices and retail requirements (Stockholms Stad, 2012b). Moreover, another priority regarding the transportation system of the urban development area is to design cycling and pedestrian links with the rest of the inner city (The Walkable City, 2010).

Regarding the different steps that will be followed during the development of the area, it could be said as Ulf Ranhagen stated (2014.06.13) that:

It is a result of a long long process about ten years back, which is elaborated during the development of the overall plan of Stockholm The Walkable City. For this specific project, an increased focus will be given on the environmental and sustainability programmes compared to the regular Swedish planning system.

And as Ulf Ranhagen (2014.06.13) continued:

The sustainability programme will be more extensive than normally, planning with different goals for energy, waste, transportation, environmental issues etc. and consequently there will be implemented a large number of environmental assessments such as for example, for the remediation of the contaminated land from the former industrial activities in the area. Therefore, there has been already more added investigation compared to the business as usual planning”.

(Ulf Ranhagen)

Regarding the planning and design process, a crucial question was the use or not of a certification tool such as the BREEAM Communities. Based on the interview with Stefan Modig (2014.06.23) there have been discussions about using certification systems from the market but the decision was not to choose and favour one system and according to Stefan Modig an idea is that they wanted to build up a system that will be as appropriate as possible for the Swedish context.

However, the decision was not easy. Before deciding to reject the use of a market certification tool there has been a discussion for couple of years on how to implement BREEAM or other tools in a Swedish context (Modig, 2014). As Stefan Modig (2014.06.23) continued, a few years ago the Swedish Green Building Council (SGBC) found out that BREEAM would be the simplest system to adapt to Swedish context, mostly because the organisation behind BREEAM was open to discuss national adaptation compared to other systems that do not accept changes. So, they started to test BREEAM for the case of Stockholm Royal Seaport. The test, called Beta Tests, took place last winter 2014 and it was about applying in theory the certification system in the project and they went through all the criteria to see if it is possible to use and if it is relevant for the specific case. The conclusion according to Stefan Modig (2014.06.23) was that:

There is too much work to be done with the system to adapt it and make it relevant for Stockholm Royal Seaport because of the differences between Sweden and Britain. With BREEAM we had to make a lot of documentations on issues that we really don’t need to work with and we won’t take any credits for other issues as well.

(Stefan Modig)

According to Stockholms stad (2012b), in Stockholm Royal Seaport development an important aspect is
innovation. When Ulf Ranhage (2014.06.13) asked about the innovative aspect of this development, he first referred to the innovation centre that has already started in the area and then to the creation of a wide and intense network between academia, business and public sector; and he explained that there are maybe twenty or more development projects in the area where there is experimentation and test of different ideas and systems like the eco-cycle model, smart grids (for improved energy supply), ecosystem services (for valuing urban greenery), smart cities (a monitoring and feedback tool), public transportation etc. Moreover, a lot of planning experimentation regarding the typical planning system through the development of ideas, projects and research integrated to the planning which also demands much more resources. Even more, Stefan Modig (2014.06.23) supported that innovation regarding Stockholm Royal Seaport is the creation of the follow-up system which is based on an ambitious way of working and can be a base for further developments and adaptation. From a different point of view, according to Carlsson-Mård (2013), Stockholm Royal Seaport will be considered the “stepping stone” for companies that want to test, develop and demonstrate innovations, since it will make available in the rest of Stockholm the experiences and the innovative technical solutions.

The ambition for this project is to support the exportation of Swedish environmental technology (Carlsson-Mård, 2013; Ranhagen & Frostell, 2014). And as Stefan Modig (2014.06.23) stated, the aim is to create a model both for Stockholm and Sweden and also internationally. And he continued saying that what they have found out during the process, is that they compared it with other projects around the world with sustainable aims and they focused on creating a whole that is sustainable and not separate parts.

> We wanted to create a whole, a system. We are not the best in one of those but we made the best in the whole.

(Stefan Modig)

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<thead>
<tr>
<th>The main objectives of the urban development of Stockholm Royal Seaport</th>
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<tr>
<td><strong>OBJECTIVES</strong></td>
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<tr>
<td><strong>SOCIAL</strong></td>
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<tr>
<td>• Good access to public and commercial services.</td>
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<td>• A safe living environment for children and adults.</td>
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<td>• Successful integration of old and new.</td>
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<td>• Proximity to park and green spaces and good recreation opportunities.</td>
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<tr>
<td><strong>ENVIRONMENTAL</strong></td>
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<tr>
<td>• Reduce climate impact.</td>
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<td>• Tackle polluted areas.</td>
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<td>• A healthy living environment.</td>
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<td>• Safeguard and develop biodiversity.</td>
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<td><strong>ECONOMIC</strong></td>
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<td>• Effective land reuse</td>
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<tr>
<td>• Make the most of Hjorthagen’s central location.</td>
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<tr>
<td>• Encourage a good entrepreneurial climate.</td>
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<tr>
<td><strong>PHYSICAL SPACE</strong></td>
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<td>• Accessible, vibrant and varied urban development.</td>
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<tr>
<td>• Protect and safeguard the historic built environment.</td>
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<tr>
<td>• Safeguard the valuable cityscape and landscape.</td>
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<tr>
<td>• Excellent public transport provision and pedestrian and cycle paths.</td>
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(Stockholms stad, 2012b)

According to the city of Stockholm (Stockholms stad, 2012b), the objectives and requirements will be developed and updated over time as new knowledge and new technology will be acquired. Detailed development planning in the area is based on the programme for the environment and sustainable urban development.
Developers’ Perspectives

This project is part of the Stockholm’s plan, which aims to increase the density of the city and also to enhance the role of Stockholm as “a leading city in green urban planning”; and since the City of Stockholm is the owner of the land, it tends to invest a lot in this project and therefore, as it is stated in the development plan “Stockholm Royal Seaport is planned with high demands in order to become an example of sustainable development and a model for other growing cities around the world” (Sustainable Cities, 2014).

The Stockholm Royal Seaport, as it is supported by the city of Stockholm, is planned to be “a global showcase for sustainable urban design, where several researchers will contribute to the development of Stockholm’s new environmental profile project” and moreover, it will serve as a basis for future research and development (CESC, 2014).

In order to achieve this aim, the City of Stockholm is gathering a wide range of developers, architects and entrepreneurs, to work close together, to assure a high standards development based on good collaboration of experts in various fields (Sustainable Cities, 2014). For instance, for the design and construction of the 3,500 homes for which the land was allocated up until 2011, collaborated 25 developers and almost as many architects in parallel, ensuring that way the variation regarding design principles and also types of apartments, such as rented and “tenant-owner” homes, or even housing for students, families etc. (Stockholms Stad, 2012b).

The first detailed development plan, North 1, was conducted in 2008 and before its consultation stage, a detailed programme was set up for the first phase of the project in Hjorthagen, aiming to address planning issues regarding the environment for a larger area than the area covered by the detailed development plan (Stockholms Stad, 2012b).

In parallel with the detailed programme for Hjorthagen, an environmental impact assessment was produced, regarding issues like the impact on the landscape, taking into consideration the proximity of the developing area to the Royal National City Park (Stockholms Stad, 2012b). In addition to this, a number of different assessments are planned to take place during the development process, such as “a special children’s impact assessment” which is planned by the city in order assess the development from children’s perspective (Stockholms stad, 2012b).

For achieving the vision for a sustainable development, the City of Stockholm should take care of many different aspects; these refer to remediating the former industrial land, minimising climate impact through enhancing and expanding public transport, developing biodiversity and also investing on ecocycle solutions, renewable energy sources for energy supply and energy-efficient homes (Stockholms Stad, 2012b).

Regarding the remediation of land, the City of Stockholm acted with great responsibility, since it is a very important issue. In November 2008, they began the remediation on land affected by former industrial work by taking samples in order to check the substances spread in the ground and their impacts (Stockholms Stad, 2012b). As it is stated in the development plan, the remediation work can reduces significantly a possible impact to the environment as well as it can reduce the amount of heavy transport and specifically “Cleaning the water from one of the old gas holders locally saved 1,250 heavy transport journeys to and from the area – the same distance as 2.5 times round the earth” (Stockholms Stad, 2012b).

After that stage, the City of Stockholm moved to the second housing phase and hired contractors responsible for land reinforcement, site roads, streets pipeline etc. (Stockholms Stad, 2012b). Moreover, according to the planning system in Sweden, the development plan should comply with standards provided by the Environmental Code; for that reason the City of Stockholm put in charge the Environmental and Health Administration, as its inspection body for the construction and especially the polluted land areas, in order to ensure that the work plan will be in accordance with the Environmental Code (Stockholms Stad, 2012b).

One major component of this development is Fortum, a Finnish energy company focused on the Nordic and Baltic countries, Poland and Russia (Fortum, 2014). In the case of Stockholm Royal Seaport, Fortum is responsible for the production of electricity, district heating and district cooling and electricity distribution. Moreover, for this development, it received an environmental permit to build a biofuel-fired CHP plant at Värtan, which will be able to supply 25% of Stockholm’s heating requirements and 10% of its electricity requirements, reducing at the same time the carbon dioxide emissions (CO₂) by 800,000 tonnes a year (Stockholms Stad, 2012b). This action, can characterised as innovative regarding the development plan of the whole area and will have a significant role in the reduction of environmental impact for the city of Stockholm (see Fig. 6.2.15).
In order to keep the goals of this development clear and follow certain guidelines, for a project as big and complex as Stockholm Royal Seaport, it was considered very important the follow-up and continuous evaluation of the work. Hence, the City of Stockholm in collaboration with the Royal Institute of Technology (KTH) and the Clinton Climate Initiative, within the framework of the global Climate Positive Development Program (CPDP), developed a new follow-up model that complies with the environmental requirements and it was planned to generate measurable data at a detailed level in order to identify the measurements that need to be revised and improved during the planning and the development process (Stockholms Stad, 2012b).

Figure 6.2.15. Time plan for Stockholm Royal Seaport. Source: Stockholms stad, 2012
SELECTED FOCUS AREAS that influence the urban design for Stockholm Royal Seaport

1. CLIMATE-ADAPTED & GREEN OUTDOOR ENVIRONMENT

The urban district must be able to cope with increased precipitation, a warmer climate and rising sea levels, issues that demand specific actions regarding the urban design perspective. Urban wetlands will be established and oaks will be planted. A green surface factor will be produced on the basis of the natural conditions for each phase, to be used as a guideline in designing the outdoor environment. Points are awarded for social and ecological qualities in the outdoor space. Planting an oak tree, for example, results in a higher number of points (for the sustainability rating system that was developed) than planting a bush. If the oak also provides shade for a neighbouring playground, it earns even more points.

2. ENERGY

In urban design, buildings consist an important aspect that must be managed and designed from the beginning. The area must contain energy-efficient buildings such as passive homes and plus homes. The energy must be renewable and the buildings must be designed such that they generate their own solar or wind energy. Together with a number of other stakeholders, Fortum is running a research and development project on a smart electricity grid in Stockholm Royal Seaport, to be tried in the first phases of the Hjorthagen development. The aim of the requirement for self-generated electricity is twofold in that it seeks to increase the amount of renewable energy produced and to improve the efficiency of energy use in buildings. In order to integrate a smart grid in the area, plans and designs should be prepared from the beginning in order to be adjusted in the design requirements of such a system.

3. WATER, WASTE & ENERGY ECOCYCLE

It is important to have an ecocycle that better manages sewage products, reducing the amount of nutrients piped into the Baltic Sea and thereby the risk of eutrophication. In Hjorthagen the aim is for all food waste to be turned into biogas. The food waste contributes towards the production of biogas, and all apartments will have waste disposal units. Vacuum waste collection systems will reduce the amount of transport and help to ensure that waste is sorted and managed in the best possible way. The establishment of vacuum systems underground will leave the ground area free from other waste collection systems and for that reason demands integration in the masterplan from the beginning. Moreover, to ensure every opportunity for sorting, reusing and recycling waste, there will also be source sorting areas in all buildings and a recycling centre in the gasworks area.

4. ENVIRONMENTALLY EFFICIENT TRANSPORT

Another important aspect for the design of an urban area is its transportation system. The way an urban area is designed has a major impact on the travel patterns created within and to and from the area. The Stockholm City Plan states that all planning must promote walking and cycling, presenting at the same time strategies for a denser and more cohesive Stockholm – urban development in which distances are experienced as being shorter. The urban district must have a wide range of sustainable transport and also there will be opportunities to charge electric cars throughout the area. It is expected that having most facilities on the doorstep, combined with e-service solutions will reduce the need for transport. (Stockholm’s Stad, 2012b)
Chapter 7

Results

Summing up the case studies

Interview data

Zooming in BREEAM Communities and analysing the urban design related criteria
7 Results

7.1 Comparing the case studies

Regarding the three case studies analysed above, there are some important differences in the size of the development and the tools used. Notwithstanding, even if the size of developments differ, the way they work on areas make it easier to compare since they work each time on small parts or blocks and they continue like this for the whole area. The main common characteristic is the aim of the three projects to become examples of sustainable development that will reduce significantly the impacts during all phases from construction to completion and function in the everyday life of the future residents.

Since the three case studies are being developed in Sweden, according to the Swedish law and legislation, they had to follow specific steps regarding the development of plans (comprehensive plan, detailed plans, environmental assessments etc.). However, the way these plans were developed, differ according to the use of different process tools. For the first two cases, Masthusen and Kabeln, the use of BREEAM Communities process and certification tool influences the processes since it demands the assessment of a lot of different aspects and the examination of a great variety of criteria and issues that are included in the BREEAM Communities checklist. This process, as it is described also by the interviewees, demands a lot of additional time and adaptations in order to reach certain goals included in the scheme.

On the other hand, for the case of Stockholm Royal Seaport, the creation and development of tools for assessment and measurable data (Climate Positive Development Program (CPDP), eco-cycle model) and follow up model that is developed specifically for this project demand time and resources as well.

In all case studies, the use of these tools sets certain guidelines regarding the design principles of all aspects; the transportation issues, the building design and architecture, the design of public spaces and the final character of the areas under development.

The case of Masthusen, is a good example for the use of BREEAM Communities, since it is already in the second phase of BREEAM certification, while the information for Kabeln is gathered and based mainly in the vision developed by the Sundbyberg City and the interviewee Anna Barosen. However, even if they will use different editions of the scheme, they follow the same guidelines and process and additionally similar targets have been set adjusted in each case.

What it can be noticed regarding the first two case studies in comparison with the third one is that according to the interviewees, in the third case the focus was only in the specific case context and country prerequisites and characteristics which led to the rejection of the use of BREEAM Communities and the development of case-

<table>
<thead>
<tr>
<th>Stockholm Royal Seaport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size: 236 hectares</td>
</tr>
<tr>
<td>Start of construction: 2009</td>
</tr>
<tr>
<td>Transport options: Biogas bus, tram, subway, boat bus, bicycle, pedestrians</td>
</tr>
<tr>
<td>Energy target: 55 kWh per m2 per year</td>
</tr>
<tr>
<td>Environmental targets: Carbon dioxide emissions below 1.5 tonnes per person by 2020, adapted to changed climate; fossil fuel-free by 2030</td>
</tr>
<tr>
<td>Character: Offices, businesses and varied housing reflecting Stockholm’s diversity. An accessible, dynamic and climate-adapted district combining housing with businesses, cultural experiences and a rich outdoor life.</td>
</tr>
<tr>
<td>Completion: 2030</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Masthusen, Western Harbour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size: 10 hectares</td>
</tr>
<tr>
<td>Start of construction: 2010</td>
</tr>
<tr>
<td>Transport options: Biogas bus, tram, bicycle, pedestrians</td>
</tr>
<tr>
<td>Energy target: Specific energy (according to the definition of Building Regulations (BBR)-Boverket) and within Masthusen not exceeding the: Housing Units 55 kWh/m2 Local Units of 50 kWh/m2</td>
</tr>
<tr>
<td>Environmental targets: Reduced emissions of greenhouse gases, sustainable use of natural resources and Malmö to be based completely on renewable energy by the year 2030</td>
</tr>
<tr>
<td>Character: Masthusen will be an accessible and open part in the Western Harbour. Apart from housing, offices and services it will include restaurants, activities and spaces for recreational activities</td>
</tr>
<tr>
<td>Completion: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Kabeln, Sundbyberg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size: 6.3 hectares</td>
</tr>
<tr>
<td>Start of construction: in future</td>
</tr>
<tr>
<td>Transport options: trains, subway, metro, buses, tram, bicycles, pedestrians</td>
</tr>
<tr>
<td>Energy &amp; Environmental targets: the plan is not expected to have negative environmental impacts and negative consequences for the climate but the specific targets will be set from the developers and BREEAM assessors.</td>
</tr>
<tr>
<td>Character: More urban character compared to the previous industrial character, with offices, residential buildings and retail in the bottom floors.</td>
</tr>
<tr>
<td>Completion: -</td>
</tr>
</tbody>
</table>
specific tools and models. However, in all cases, the important issues remain the same (energy, transportation, housing and office places, urban greenery etc.) but what differs is the way these issues can affect the urban design aspect. As it can be assumed from the above, the BREEAM Communities, as an international scheme, set very strict and specific criteria common for all cases leaving sometimes other aspects out of interest (like in the transportation issues as it is described for the case of Masthusen and Kablen from the interviewees).

7.2 Interview data

The interviews were used for data collection not only regarding the case studies analysed above, but also in order to obtain an overview of the interviewees’ perspective regarding the use of BREEAM Communities.

One important question which also consists one of the research questions refers to the influence of the use of BREEAM Communities in urban design. Can the urban design be still the same with and without the use of BREEAM Communities?

Judging from the reactions and the answers of the interviewees it is difficult to give a very specific answer regarding how exactly urban design can be affected by the use of BREEAM Communities scheme but what can be said with certainty is that BREEAM Communities affects significantly the urban design of new developments but this also depends on the consistency with which developers and assessors deal with the criteria of the scheme. As Anna Barosen (2014.05.15) characteristically said:

Urban design is much more complex related to other issues and I think what is important to develop in BREEAM Communities as a method is to encourage more or give more credits to collaboration, discussion and reflection for what is good in the specific project because it is tough to say what is good or bad trying to cover all the cases developed under the use of BREEAM Communities. So, the most important thing is to have a common vision for what will this area be or how it will come and live in the area or what kind of area do we want it to be. And all this discussion should take place in an early stage of the development.

(Anna Barosen)

Therefore, what can be assumed here is that the unique characteristics of each development are of major importance and should be those that will set the main guidelines of the development.

Even if BREEAM Communities is characterised as a site specific assessment tool (BREEAM Communities, 2012) it includes many criteria (like criteria included in the Transport and Movement category, see Chapter 5. 5.4) that affect the masterplan of the area and consequently the urban design and they are common for all the cases and they cannot be balanced and awarded with credits if there are differences and changes adjusted to different cases.

Anders Nilsson (2014.05.21) also supported that urban design can be affected by the use of BREEAM Communities and as he said:

If you use it in an ambitious way it can really influence significantly the design plans. Sometimes you need to compromise and be more critical towards all the criteria and the credits needed for each case.

(Anders Nilsson)

For instance Anders Nilsson (2014.05.21) said, talking for the case of Masthusen, that they haven’t done much changes in the plans since they decided for some issues to settle for less credits in order not to change something that they do not consider of major importance for the specific case.

Very similar was the perspective of Stefan Modig regarding the influence of BREEAM Communities in urban design. As he said:

I think, using the BREEAM Communities scheme we will have to change some things about the design but I am not sure that these all would have been for the better of the result. Sometimes we have to do all the changes from BREEAM but we won’t get a better project because we prioritize different and this also leads to different results in masterplanning and consequently urban design.

(Stefan Modig)

According to other opinions, BREEAM Communities is mainly a supplementary tool that can be used for limited areas. In specific, Ulf Ranhagen (2014.06.13) supported that:
BREEAM Communities can be used as a supplementary tool always in collaboration with the developers of the project that refer to limited areas. For example in Western Harbour there is the Swedish planning system together with the environmental programmes and assessments and then BREEAM Communities is kind of an added tool.

(Ulf Ranhagen)

Ulf Ranhagen (2014.06.13) characterised the tool as supplement since he said that it cannot replace the Swedish planning process, referring to the comprehensive plans, the detailed plans and the environmental programmes and assessments (e.g. Environmental Impact Assessment – EIA) that cannot be overlooked. However, looking into future, he added that maybe BREEAM Communities will be further developed as a wider strategic tool that would be more relevant to Swedish planning system and its influence on urban design for instance will be controlled by the Swedish planning system and it will be more site specific.

And in the same direction, Mats Lundström (2014.06.02) talked about BREEAM Communities saying that some of the criteria in the scheme is basic/standard in Sweden, already regulated by law or by practice but some of them aren’t even useful. And he continued saying:

Therefore, I think, it is important to adapt the certification standards to the local/national context. But then, if you change too much for the Swedish versions of BREEAM Communities and consequently for other countries, international investors might be insecure of the economic value since market hates changes and uncertainty.

(Mats Lundström)

Therefore, Mats Lundström presents here a contradictory point of view regarding the adaptation of BREEAM Communities to each country’s planning system. More specifically, regarding the planning and urban design perspective, he supported that it is important to look at the big picture- how will this project contribute to the rest of the district and city, what will be the impacts in environmental, social and economic level and not only focusing on the development plot/area (Lundström, 2014).

Another issue that was briefly discussed during the interviews was about the right time of integration of BREEAM Communities scheme in the planning and design process in order to have better results and also time to incorporate what is demanded from the scheme and suitable for the specific project. According to BREEAM Communities (2012), the scheme should be integrated in the process very early since as a process tool can lead and organize the whole development and optimize the procedure for both planning and design from the beginning avoiding changes and delays in the process. Anna Barosen (2014.05.15) agreed with this opinion adding also the importance of a good match between BREEAM Communities and the Swedish planning process saying (see Fig. 7.1.1):

I think BREEAM Communities need to be developed to be really a good match for the Swedish planning process because now it´s much hard to integrate those and since the manual is what it is right now it would be better to do the Step 1 very early then do the planning process and then do Step 2 and 3 and this I think would be a perfect scenario.

(Anna Barosen)

On the other hand, Anders Nilsson (2014.05.21) talking for Diligentia and Mathusen case supports that the time to integrate BREEAM Communities in the process depends on what you want from the certification tool:

This kind of framework in order to use it needs a lot of discussion before starting to integrate it in the process. An advantage for the case of Mathusen was that they already had a master plan, so they can use the scheme as a basis to develop further. It is more difficult if you don’t have a plan to start from. So, I would say according to the case and what you have regarding the development, it depends when to use the BREEAM Communities tool. Diligentia when started working with Mathusen had already made a lot regarding planning before started using BREEAM Communities. Then it takes years to use BREEAM Communities, to set the targets and work with all the criteria etc. hence, it is good to have made a basic preparation before using it.

(Anders Nilsson)
Two important issues that were also discussed during the interviews pertain to time and cost needed for the use of BREEAM Communities tool. Reading the categories and criteria included in the checklist of the scheme one can easily assume that in order to fulfil and check all these a lot of time is demanded since they need to follow processes and actions that refer to a lot of issues which become even more complex when it comes to urban design. Regarding the urban design aspect the changes sometimes are feasible and easy to make but they can also refer to big scale issues and big changes in the masterplan of the whole area which affect other issues that consequently need to be designed again in different way. For this issue Ulf Ranhagen (2014.06.13) commented:

A negative aspect is that there are too many details from the beginning that you have to do, calculate and do some kind of quantification. To have a successive process you have to start in a more qualitative way. With this system with all the calculations and quantitative data analysis, it can be a risk. It is more like a bureaucratic system where you have to calculate and fulfil criteria which is difficult sometimes to calculate since they can be assessed with more qualitative ways. Such tools should not be heavy to use.

(Ulf Ranhagen)

Talking about the time issue, Anna Barosen changed it slightly introducing another very important aspect that one has to have in mind when she or he works with such tools. She talked about the timing issue and she said:

I don’t think time itself is a barrier for the use of BREEAM Communities. But timing might be a barrier because it demands the synchronization and collaboration of a lot of different people. For example, for the case of Kabeln, as a specialist, I am working with the internal property owner because we want to start a project on this plot and we want to decide how much money we need to start the feasibility studies and then we need different group of people that they need to give permission and say ok on their behalf. And then, other people that work with other things need to agree also. There are some money for the feasibility studies and when this starts maybe these people aren’t familiar with BREEAM Communities. So, it requires that everybody knows the processes and the tool before the feasibility studies in order to agree and put money from the beginning. Everybody who works, costs money as well. For example you take an architect and you start with some structure and the masterplan. But if you bring BREEAM Communities after that it might be too late. So, timing, I think is the big challenge.

(Anna Barosen)

According to BREEAM Communities (2012) “to get the most benefit from using BREEAM Communities it is important to appoint a BREEAM Communities Assessor early in the project”. Based also in the statement from Anna Barosen, “everyone who works, costs money”, hence using the certification tool requires additional cost from the beginning. Moreover, one can say that in order to fulfil all the criteria in a satisfying way many issues should be assessed and designed for the project which could also be interpreted as extra cost. However, BREEAM Communities (2012), considering the costs for a development, claims that the consideration of social, economic and environmental sustainability issues in the development process at an early stage will assist in achieving not only high-level sustainability objectives but also it may reduce the overall costs for a proposed development project and will also minimise the costs of assessment against BREEAM building standards.

In the question if the cost for the use of BREEAM Communities is a barrier for the developers Anna Barosen (2014.05.15) said:

I think it might be an issue but it depends on how big the project is. You always value everything you do. Is it worth it? Will it be worth it in 10 years from now? If we want to do things that we don’t know if they are valuable we cannot take this decision if we cannot show that this project will worth it in a longer time perspective. With the case of Masthusen, it was a kind of a test. Even though it costs a lot of money, we think it is becoming a better area and a lot of people and companies are interested in this area and talk about it because Masthusen is a name now. We believe it is worth it.

(Anna Barosen)

The same opinion regarding cost shares also Anders Nilsson (2014.05.21) who states that:

The problem for the developer is to understand and see the advantages emanating from the use of BREEAM Communities and how to make an economic benefit from the certification. They might don’t know what it means to score excellent on BREEAM
Communities and what this can cause on market like for example higher prices on plots that were developed using the tool. Diligentia was able to see that they are going to make more money using BREEAM Communities in a longer time perspective compared to if they haven’t used it. Other developers don’t know what the benefits really will be in 5 or 10 years and the costs that will arise in future.

(Anders Nilsson)

An interesting approach was made by Ulf Ranhagen (2014.06.13) who talked about resources and how the cost counts differently for big and small cities:

It can be a risk to use certification systems like BREEAM Communities. It demands more kind of resources. In larger cities you have more resources. The use of BREEAM Communities needs to put in more resources that smaller communities maybe have not this capacity. So, it could be considered a tool for rich communities. Moreover, the fact that the use of this tool may longer the process is an issue since more time increases costs. What should be done is to make it possible to apply it everywhere.

(Ulf Ranhagen)

While, Stefan Modig (2014.06.23) talking about the case of not using a certification tool supports that the money should not be the issue of using such tools:

Of course the use of BREEAM Communities tool would cost some money but still our work with sustainability without using BREEAM costs a lot of money today. If we have chosen that from the beginning I don’t think cost would be the issue.

(Stefan Modig)

However, even if in some cases, time and cost can be an issue that make difficult the decision to use BREEAM Communities for the developers and difficult to see the future benefits and not only economic but also environmental and social, there is another aspect that could compromise these thoughts and work as an incentive for the use of BREEAM Communities and this is the marketing aspect. Marketing is always a topic that has great influence and can affect many aspects and decisions. Having a certified plan from a market-tool sometimes can give an added value to the plan and put it in a better position compared to an uncertified one. This can affect competitions and decisions regarding also the design issues since the certification of a masterplan can increase its value and its validity as it can be assumed from the description of the case studies above (see Chapter 6).

The opinions regarding this issue however, varied. Some of the interviewees showed that they are aware of the marketing issues and consider their influence while other do not believe that they are of great importance. For instance, Anna Barosen (2014.05.15) said:

I think for us, Diligentia, since Masthusen was the first project certified with BREEAM Communities in Sweden, is an extra. That is why we dared. And as it seems it was worth it. There are already so many invitations from people and companies that they want to hear about the project.

(Anna Barosen)

While on the other hand Anders Nilsson (2014.05.21) and Stefan Modig (2014.06.23) do not have exactly the same perspective with Anna Barosen.

[...] I don’t think people are so interested in this aspect, if an area is developed and certified under BREEAM Communities scheme or not.

(Anders Nilsson)

I think for Stockholm as a city, marketing and advertising regarding the use of a certification tool is not an issue. The point for us as a city would be if using BREEAM to lead to a better result and not just to be able to say that we used BREEAM. However, it might work that way for the contractors.

(Stefan Modig)

Even more critical regarding the market values of certification tools such as BREEAM Communities stands Mats Lundström (2014.06.02):

BREEAM Communities like other certification tools are systems developed by and for the real estate development/property owner industry. The developer chooses the system she/he thinks will be the most profitable in the future, when selling the property. Will the future
buyer be an American trust fund, a European real estate company, a Swedish pension fund, or...? This will decide which kind of certification systems she/he will choose, since certification systems attract different group of buyers. [...] And of course, considering for example energy costs it is more attractive to buy an energy efficient building than a non-efficient one. However, a neighbourhood/communities certification is more than that. Will buyers value this as high? It depends on the market and flat owners or residents’ willingness to pay for this in the long run. It seems it has a marketing value, but is the value as high for the first certified neighbourhood as the following one? I am not sure about this, but sometimes you have to be number one to get the premium market value, to be special.  
(Mats Lundström)

Some of the interviewees also that worked or are still working with BREEAM Communities talked about their experience and what they learned from this process. Anna Barosen (2014.05.15) who is close related to the use and application of BREEAM Communities and the coordination of all the relevant aspects related to sustainability issues says:

Since I am the environmental specialist working with Masthusen case from the beginning, I would say that if you work with one building it is still tough to integrate some of the issues but you have the team to work for this. One the other hand, when you work with a whole area then you have to deal with a lot of people and experts and people who own the land. It is huge. There are so many people to talk and convince that the idea to use the tool is good and worthy and for this you need energy, time, workshops and money and all these in the beginning because this way it would be easier to continue afterwards. I was not involved in all the aspects because we had experts and specialists for each issue. I was holding it together working with the assessor of BREEAM Communities to handle the process.  
(Anna Barosen)

From this description it can be also made obvious that this process demands a lot of organization and coordination between many different actors before even the whole process begins.

Anders Nilsson (2014.05.21) also talks about his feeling from working with BREEAM Communities tool:

The BREEAM Communities standard for Masthusen provided us with an ideal opportunity to review how we develop sustainable communities in Sweden. I would say that for us BREEAM Communities is the optimal tool for collaboration between authorities and developers. Moreover, it provided the ability to assess a wide range of sustainability issues within the same project. [...] What else I have learnt from this process in Masthusen, is that it needs a lot of time, not just one but four years.  
(Anders Nilsson)

On the other hand Stefan Modig (2014.06.23) talking from an architect’s point of view and based on the experience he had with BREEAM Communities only from the tests for Stockholm Royal Seaport, is very willing to work more with the scheme since he says:

I think it is, as a principle, a good way to work. But we also need to develop the Swedish system that works for our conditions much better than BREEAM Communities; to make it not only a hypothetical theoretical framework.  
(Stefan Modig)

7.3 Zooming in BREEAM Communities and analysing the urban design related criteria

Except for the qualitative analysis of the BREEAM Communities scheme, through the case studies and the interviews, another way to interpret the influence of BREEAM Communities in the urban design, is to make a more quantitative analysis based on the credits and the score earned from its various criteria. In order to make calculations that will lead to more quantitative results regarding the influence of BREEAM Communities in urban design aspect, I considered a case which has scored outstanding in BREEAM Communities in order to consider that all credits earned are coming from all the categories, assuming that all mandatory criteria are met as well as all the optional criteria related to urban design, calculating them as percentage in each category and in overall tool. Considering this case, we can have results regarding the contribution of urban design related criteria in BREEAM Communities and the influence and relationship between those two.
In the table below (see Table 7.4.1), all the categories from BREEAM Communities scheme are gathered and for each one it is recorded its weighting in the total score and it is calculated the percentage of credits earned form both urban design related criteria and urban design non-related criteria. Finally, as it can be seen in the last column in the table below, it is calculated the urban design fraction for each category separately and the total contribution of urban design related criteria in the overall score.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Weighting for each category/ total score</th>
<th>Value of credits earned from urban design related criteria</th>
<th>Value of credits earned from urban design non-related criteria</th>
<th>Urban design fraction in each category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance</td>
<td>9.3%</td>
<td>5.0%</td>
<td>4.3%</td>
<td>54%</td>
</tr>
<tr>
<td>Social and Economic wellbeing</td>
<td>42.7%</td>
<td>20.3%</td>
<td>22.4%</td>
<td>48%</td>
</tr>
<tr>
<td>Resources and Energy</td>
<td>21.6%</td>
<td>10.5%</td>
<td>11.1%</td>
<td>49%</td>
</tr>
<tr>
<td>Land use and Ecology</td>
<td>12.6%</td>
<td>8.8%</td>
<td>3.8%</td>
<td>70%</td>
</tr>
<tr>
<td>Transport and movement</td>
<td>13.8%</td>
<td>11.1%</td>
<td>2.7%</td>
<td>80%</td>
</tr>
<tr>
<td>Total contribution of urban design related criteria in overall score</td>
<td>100.0%</td>
<td>55.7%</td>
<td></td>
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Table 7.4.1. BREEAM Communities 5 Categories, weighting of each category and credits earned from urban design related criteria and other.

The diagram below (see Fig. 7.4.1) illustrates the percentage of credits for each category that are earned from urban design related criteria included in each one of the five categories. As it can be seen, there are some prevailing categories that possess the biggest part of the assessment process like the category “Social and Economic wellbeing” which possesses the 42.7% of the overall process while the lowest part possesses the category “Governance” with 9.3% weighting in the total score.

Figure 7.4.1. Total and urban design related criteria scores for each category
The contribution to the overall score coming from urban design related criteria is affected by the total contribution of each category. So, for example the biggest contribution to the total score from urban design related criteria is coming from the “Social and Economic wellbeing” category, 20.3%, and the lowest from the “Governance” category, 5.0%.

Calculating the credits and their weighting in each category and adding the credits earned from urban design related criteria, results that the total contribution of urban design related criteria in overall score is 55.7%, as it is also illustrated in the diagram below (see Fig. 7.4.2).

Moreover, as it is illustrated in the following diagram (see Fig. 7.4.3) there are some categories which are urban design sensitive and consequently it could be said that they are of greater interest for an urban designer. For instance, as it is already proved above, the category “Social and Economic wellbeing” contributes with a percentage of 20% from the 100% of the assessment process which means the 1/5 of the whole process.

Finally, another interesting observation to make, is the urban design fraction in each category, which shows the division between the occupation with urban design related criteria and the occupation with other urban design non-related criteria, within each category (see Fig. 7.4.4). For instance, making a generalization and a hypothesis that an urban designer works in total with a category in cooperation with other experts, when the urban designer works on “Social and Economic wellbeing” category, will achieve a very high score related to urban design aspect but at the same time, he or she will work with a big number of criteria non-related to urban design. On the other hand, there are some categories like “Transport and Movement” that are pure urban design related with 80% urban design fraction compared to 48% fraction for the “Social and Economic wellbeing” category.
Figure 7.4.4. Urban design fraction in each category.
Concluding Detections, Reflections and Suggestions

How BREEAM Communities is related to urban design?

Concluding remarks

In what way have I contributed to knowledge?
8 Concluding Detections, Reflections and Suggestions

8.1 How BREEAM Communities is related to urban design?

The thesis constitutes a study of ongoing projects developed in Sweden, with and without the use of BREEAM Communities and interview results that depict the thoughts and perspective of people relevant to urban design and development of whole communities. By studying the experiences and results from the ongoing projects where BREEAM Communities or other kinds of schemes for districts applied, we can learn more about the design, potential and shortcomings of BREEAM Communities which can give us valuable knowledge to consider in the development of the tool.

Interviews consisted an important piece of the methodological part of this thesis and as it is already referred above they were the key-method for data collection. The interviews were semi-structured guided by two different set of questions. The first part included questions related to each case study that led to the gathering of information that has been already presented in the Chapter 6. The second part of questions aimed to the examination of the research problems, therefore it was consisted of questions regarding the use of BREEAM Communities scheme and mainly urban design related. Through the interviews, it was made possible to see different and even contradictory point of views regarding the same issues that will comprise the basis for further generalizations.

Analysing the interview data it was made obvious that the issue of urban design is very complex and difficult to interpret since it is connected to many other issues that interact. As it can be seen in Chapter 5 where the BREEAM Communities manual is analysed and also are presented the criteria related to urban design, there is a great number of criteria which somehow affect urban design directly or indirectly. It was difficult to choose them because the most of them seemed to be relevant to urban design or even if they didn’t seem relevant with a second thought there were some indirect influences on urban design aspects. So, there are design criteria that is obvious how they affect urban design and other less practical and more qualitative that can also affect it (like for example criteria that refer to consultation methods and assessment plans for transportation issues etc.).

Moreover, through the analysis of BREEAM Communities manual and the criteria related to urban design, an important outcome is that there is a great variety of urban design related criteria that would not otherwise have been addressed as well as proposes and solutions which might have not been included. So, what it was also referred from the interviewees who worked with BREEAM Communities, is that one effect of this tool is that helps the design team to draw attention to a wide variety of design features and solutions that the team members might are not familiar to work with or which have might been ignored.

Through this wide variety of criteria related to urban design, BREEAM Communities also helps the developers and more specifically the design team to set discrete technical standards that pertain a big range of design issues and decisions leading to more sustainable design solutions and consequently to the reduction of the environmental impacts.

Furthermore, BREEAM Communities can be seen as a supportive tool for the design team since it can provide a talking point for all the members of the team and brings them together in a very collaborative process as it was also described by Anna Barosen in the previous section. Even if a lot of experts and professionals work for the same project, they might not engage with one another directly but BREEAM Communities enhances this engagement since it includes criteria that demand multitasking. Moreover, sustainable urban development has become a need which is calling more and more attention and requires substantial changes and contribution from various stakeholders. Sustainable urban development requires more extensive changes to make progress on an area and consequently more effort and commitment from a variety of stakeholders in the community and its inhabitants. Hence, to work on this effectively and make progress in this area, requires working methods that involve all the stakeholders and policy instruments since they are all affected by other actors’ choices and decisions. Therefore, BREEAM Communities can have the role of the process tool that enhances and makes mandatory this collaboration by establishing new working methods and procedures.

Another point regarding the relation between BREEAM Communities and urban design can be the added value that can have the design proposals certified by BREEAM Communities. Even if the opinions regarding the marketing issue are contradictory still in the market-world the brand and the recognized tools count as an advantage. So, it could be said that in our age sustainability issues and environmental awareness can function branding and can increase the attractiveness of an area with the potential to increase its value as well. Hence,
for those who work with BREEAM Communities it can be seen as a useful resource for sustainable design which will help them to promote their ideas and interests against others and avoid changes and compromises in their design solutions.

Although BREEAM Communities includes this wide range of issues and criteria, what the interview data suggests is the importance of the local characteristics and prerequisites that should be on focus. The companies that choose to certify districts under BREEAM Communities, like Diligentia, described that before starting to apply the tool they needed to do a lot of administrative work and documentation spending time and resources in order to develop and customize the manual to the local prerequisites.

Therefore, mainly from the developers’ perspective it could be said that there are several reasons that lead to the use of BREEAM Communities as a process and certification tool for the development of a new sustainable district. When the main aim of the development from the beginning is the creation of a sustainable community, BREEAM Communities can serve as a processing tool for the management of sustainability issues and even more design issues that are important from the beginning and demanded for the creation of the masterplan for the area. Moreover, except for a supplementary process tool, another motive is that it can give rise to different kinds of added value, like the market issues and the importance of being “well-known” as a project and as a new area. The possibility of certification from an international tool like BREEAM Communities can increase the incentives to work with sustainability issues and moreover, the certification has the potential to contribute to marketing and branding.

Moreover, interviewees that work with BREEAM Communities emphasized that what is the most advantageous about this tool is the long-term benefits that can bring for both the developing area and the society as a whole. The fact that consultation issues are mandatory in BREEAM Communities enhances the influence that can have in a variety of issues applying broader and more innovative consultation methods than usual and more important early in the process. Hence, this type of mandatory consultation can increase not only the quality of the plans and proposals but also the acceptance of the urban development projects. As it is already referred in the Chapter 3, regarding the Swedish planning system, the consultation part is of great importance from the beginning of the planning process, trying to involve all the relevant actors as well as the residents living in the developing area and its surroundings. In that case, for Sweden, it could be said that BREEAM Communities can support and enhance the Swedish planning system to make it even better from this perspective.

In each case, interview data always refers to the urgent need to adapt BREEAM Communities to local conditions and for these specific case studies to Swedish conditions in order to serve as practical process tool. But through my study for the BREEAM Communities tool, the case studies and the interview data, what I would highlight is that the most important offer of the tool is that it can serve as a basis for inspiration and discussion covering a very broad range of issues and criteria that should be considered in urban design related projects. Even more, as it is also mentioned in the scheme for BREEAM Communities (2012), the tool also provides users with “a credible set of key sustainability performance indicators for a range of development impacts” giving the chance to use BREEAM Communities as a method to define performance levels for individual design issues in support of specific objectives set by the municipality, the developers and the design team.

Finally, another point that ensue from the interview data is related to the complexity of the tool. Because of the vast pages of criteria and issues, the details accompanying each criterion and the calculations, some suggest that this whole process could be a risk for the developers and maybe heavy and difficult to use. Hence, what is pointed out is that to have a successive process using this tool it has to become simpler and at least in the beginning to promote more qualitative working methods. This issue however, it is also referred within BREEAM Communities scheme, talking about ways that will help to simplify the assessment process as far as possible. So, BREEAM Communities tries to make use of studies and strategies that will meet the EU legislative requirements, accepting them as part of the evidence required to achieve credits; for instance, the work done for an Environmental Impact Assessment would be appropriate evidence for many of the land use and ecology assessment issues included in BREEAM Communities checklist (BREEAM Communities, 2012).
8.2 Concluding remarks

The last years, climate change has raised concerns over the rapid depletion of both the environment and its resources (Berardi, 2013). Through practice, international programs and policies have indicated that the most promising sector for a rapid transition to sustainability is the built environment (Berardi, 2013). However, as it has already referred above the built environment has very particular characteristics depending on its location, history, use, character etc. Therefore, the requirements between the municipalities differ and as a result the developers need to adapt their working methods and processes depending on the municipality they work. Based also on the interview data, some of the actors find it difficult to work with more international schemes for this reason but some of them support that there is a rapid progress on these tools in order to adapt them in the local prerequisites for each case and after that these process tools offer a very clear guideline that can help and accelerate the procedure. Moreover, as it is stated from Berardi (2013) “the dynamicity of a community suggests considering the sustainability assessment systems as tools to monitor the evolution of communities”.

The motives to use the tool are various and different according to different actors and their perspective for using the tool, like economic motives, sustainability motives, process motives etc. BREEAM Communities has the potential to serve as a processing tool for managing sustainability issues and regarding the urban design aspect for setting certain guidelines for the architects and urban planners and even more for providing inspiration and innovative ideas throughout the wide range of urban design related criteria. Hence, BREEAM Communities can serve as an aid in the process and enhance several kinds of added value, satisfying all the involved actors.

So, it is interesting that through the analysis of the case studies and mainly their comparison as well as the interviews, it can be said that BREEAM Communities doesn’t have an obvious influence in the urban design of these developments. This can be explained with several ways. One important aspect is that since BREEAM Communities is developed in United Kingdom based on the British planning processes laws and legislations, it has to be not only translated but mainly adapted in the Swedish planning processes and prerequisites for each case. So, another reason is that due to the need for local adaptation, the developers had to make a lot of amendments, changing partly the tool or even compromising and choosing between the criteria, as also the interviewees explained. Hence, it is difficult to make distinctions between the cases that are developed using BREEAM Communities or not regarding the urban design aspect since it could be said that it is used mainly as a supplementary tool.

This observation can be expanded and become a more general issue questioning the reasons that can lead to the use of process tools. As it is already referred for BREEAM Communities and can also referred for other tools as well, these methods can be useful and add value to the development for several reasons. What is my feeling mainly from the interviews is that these tools need to be dealt as supplementary tools during the development. Their contribution could refer to many different parts; since they are characterised as process tools they can be used in order to bring all the relevant actors together and organise their work in a more collaborative way. Moreover, they can also be used in order to set some certain guidelines that will lead the development, prioritising the different needs and works in order to make the processes more time and cost efficient. And the most important, regarding mainly the urban design aspect is that in order to handle in the best way possible these tools the masterplanning professionals need to see these lists of criteria as source of innovative solutions, sustainable and alternative ideas that can be either used as they are or lead to other ideas and thoughts regarding the urban design aspect. And finally, another reason, which is more market-related is the branding issue and the value that market recognised tools can add to a development. However, this advantage is more attractive mainly for the investors and developers and not very essential for instance for the architects, urban designers, planners and environmentalists.
8.3 In what way have I contributed to knowledge?

My contribution to knowledge and to the field of research through this dissertation is that by studying a part of a process and assessment tool, BREEAM Communities and analysing its pieces related to urban design aspect for understanding and interpreting the case studies that I have chosen and the interview data that I have gathered, I have tried to understand and even visualise the influence of BREEAM Communities tool on urban design of a development during its use.

Consequently, all these issues have direct impact on the professional services of urban designer and architects who are involved in projects using BREEAM Communities scheme. So, in that case my contribution, mainly through the quantitative analysis presented above, is to set some certain guidelines for architects and other people related to urban design in order to optimise their job by setting priorities and at the same time to make their work more time and cost efficient.

Based on the diagram below, which is also presented in the previous section, it could be assumed that the main focus of an urban designer and architect should be on the categories with the biggest contribution in final score from urban design related criteria, like the category “Social and economic wellbeing”. Therefore, if an urban designer or architect want to ensure faster and higher score for the overall rating he or she can achieve this by working for instance with “Social and economic wellbeing” category, which contributes the most with respect to urban design aspect compared for instance with the “Governance” category.

Hence, the charts that are presented in the previous section, apart from giving statistical information regarding the relation between BREEAM Communities and urban design, they can be seen in a more practical way by providing the design team a way to prioritize its work, so that it can get faster and higher score coming from its part. So, these charts may serve as inspiration for the work of the urban design team.

But in this part, in order to avoid misunderstandings, I should say that through observations and analysis of the interview data, all issues are so interrelated, so, even if some categories offer more criteria and consequently credits related to urban design as it is also mentioned by BREEAM Communities (2012), care should be taken when choosing to work and set design targets using individual issues and credits standards because it can limit the design flexibility and have an impact on the overall project cost.

Furthermore, working on BREEAM Communities in a combining methodological framework, including both qualitative and quantitative methods, help me to unveil the weaknesses of BREEAM Communities and talk also for suggestion. Some of them are already referred and analysed in the beginning of this final chapter through the analysis of the interview data and the relation between BREEAM Communities and urban design. What it can be added in this final part, after the quantitative analysis is that in order to make the categories more similar regarding their weighting in the total score maybe a way is the developers of the tool to increase the percentage of one category compared to another or even move some urban design related criteria into more important categories to make the actors that work with each issue to divide their work between all the categories avoiding to make big compromises.

I end this thesis by encouraging developers, municipalities but even more the design teams to handle these process tools like sources for inspiration during their work since the criteria that are included in BREEAM Communities provide a variety of issues that need to take care of and more important, innovative ideas who can lead in sustainable solutions, being an aid for urban designers.
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Appendix

List of indicators for the assessment of sustainable communities

INSTITUTIONAL sustainability
- Local authority services
- Community activity
- Local partnerships

ENVIRONMENTAL sustainability
a. Resources (natural)
- Energy use
- Water use
- Waste recycling

b. Housing & Built environment (man-made)
- Housing/ Area conditions
- Housing state of repair
- Satisfaction with home
- Green open space

c. Services & Facilities (infrastructure)
- Provision and quality
- School
- GP/ health services
- Public transport

SOCIAL sustainability
- Sense of community
- Moving in and out of an area
- Crime and safety
- Mix (income, tenure, ethnic)

ECONOMIC sustainability
- Local jobs
- Access to jobs
- Business activity
- Local training and skills
- House prices
- Housing affordability

(Berardi, 2013)
Environmental Quality Objectives (EQO)

The 16 Environmental Quality Objectives are:

- Reduced Climate Impact
- Clean Air
- Natural Acidification Only
- A Non-Toxic Environment
- A Protective Ozone Layer
- A Safe Radiation Environment
- Zero Eutrophication
- Flourishing Lakes and Streams
- Good-Quality Groundwater
- A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos
- Thriving Wetlands
- Sustainable Forests
- A Varied Agricultural Landscape
- A Magnificent Mountain Landscape
- A Good Built Environment
- A Rich Diversity of Plant and Animal Life

(Government offices of Sweden, 2013)
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Table 5.4.4. Urban design related criteria in BREEAM Communities 2012 checklist. Source: BREEAM Communities, 2012.
| CRITERION 2 | THE PUBLIC REALM IS DESIGNED TO ALLOW MULTIPLE USES FOR DIFFERENT DEVELOPMENT USERS, INCLUDING CHILDREN, THE ELDERLY AND DISABLED PEOPLE WITH REGARD TO SAFETY, COMFORT, DISTURBANCE AND SECURITY. (NO CREDITS) |
| CRITERION 3 | THE DESIGN OF THE PUBLIC REALM TAKES ACCOUNT OF THE ROLE IT PLAYS IN TERMS OF CONNECTIVITY INTO AND THROUGHOUT THE DEVELOPMENT. (NO CREDITS) |
| CRITERION 5 | AN ASSESSMENT IS UNDERTAKEN TO DETERMINE THE APPROPRIATENESS OF USING SOME STREETS IN THE DEVELOPMENT AS SHARED STREET SPACE OR HOME ZONES. (ONE CREDIT) |
| CRITERION 6 | WHERE THE ASSESSMENT HAS IDENTIFIED APPROPRIATE STREETS FOR SHARED SPACES, DESIGN PLANS INDICATE WHERE THESE SPACES WILL BE DEVELOPED IN THE SITE. APPROPRIATE LEVELS OF SIGNAGE AND SURFACE TREATMENTS/LANDSCAPING WILL BE USED TO CLEARLY DEFINE THESE AREAS. OR (ONE CREDIT) |
| CRITERION 7 | WHERE SHARED STREET SPACES ARE NOT APPROPRIATE, THE DESIGN PLANS INDICATE HOW SPACE FOR SOCIAL INTERACTION HAS BEEN CONSIDERED IN THE DESIGN OF STREETS AND OPEN AREAS THROUGHOUT THE DEVELOPMENT AND ITS SURROUNDINGS. (ONE CREDIT) |
| CRITERION 9 | EVIDENCE FROM MICROCLIMATE STUDIES ARE USED TO INFLUENCE THE DESIGN OF SOCIAL SPACES. BENCHES AND OTHER SEATING AREAS ARE LOCATED IN PLACES WITH CONSIDERATION OF THE SUN, SHADE, WIND AND RAIN. (TWO CREDITS) |
| CRITERION 10 | THE LOCAL IDENTITY OF THE AREA IS STRENGTHENED THROUGH THE DESIGN OF SOCIAL SPACES. THIS IS ACCOMPLISHED BY INCORPORATING INFORMATION FROM COMMUNITY CONSULTATION. (TWO CREDITS) |
| CRITERION 11 | “A MIX OF USES ON THE GROUND FLOOR (AND RANGE OF ACCESS POINTS TO THESE) THROUGHOUT THE DEVELOPMENT ENCOURAGES A SENSE OF VIBRANCY THROUGH DESIGN MEASURES SUCH AS: FREQUENT USE ACTIVITY OVERSPILL (E.G. CAFE) TO THE STREET TRANSPARENT GLAZING TO ALLOW VIEWS BOTH OUT AND IN” (TWO CREDITS). |

**SE 08 - MICROCLIMATE**

| CRITERION 2 | THE DEVELOPMENT IS DESIGNED TO MINIMISE ADVERSE CONDITIONS, INCLUDING NEGATIVE MICROCLIMATIC FACTORS. (ONE CREDIT) |
| CRITERION 4 | THE DEVELOPMENT IS DESIGNED TO INCREASE POSITIVE CONDITIONS THROUGHOUT THE YEAR. (TWO CREDITS) |
| CRITERION 7 | THE DESIGN OF PUBLIC SPACE OPTIMISES MICROCLIMATIC CONDITIONS AT ALL TIMES OF THE YEAR. (THREE CREDITS) |
| CRITERION 8 | THE LOCATION AND DESIGN OF PEDESTRIAN/CYCLING ROUTES TAKES FULL ACCOUNT OF MICROCLIMATIC CONDITIONS. (THREE CREDITS) |

**SE 09 - UTILITIES**

| CRITERION 1 | PROVISION OF A SINGLE POINT OF ACCESS FOR EACH SERVICE RUNNING THROUGH THE SITE. (ONE CREDIT PART) |
| CRITERION 4 | ACCESS TO THE SERVICE(S) IS PROVIDED AWAY FROM ANY CIRCULATION ROUTES ON SITE. (TWO CREDITS PART) |

**SE 10 - ADAPTING TO CLIMATE CHANGE**

| CRITERIA 2-4-6 | THE MASTERPLAN TAKES ACCOUNT OF EVIDENCE OF THE IMPACTS OF CLIMATE CHANGE ON THE SITE AND DEMONSTRATES IN THE DESIGN PLANS HOW THE RISKS WILL BE MANAGED/REDUCED/REDUCED THROUGH THE USE OF ‘WIN-WIN’ MEASURES (ONE TO THREE CREDITS). |

**SE 11 - GREEN INFRASTRUCTURE**

| CRITERION 1 | CONSULTATION HAS TAKEN PLACE WITH THE LOCAL AUTHORITY, EXISTING RESIDENTS AND POTENTIAL USERS OF THE DEVELOPMENT TO UNDERSTAND THE DESIRED USES, DESIGN, QUANTITY AND LOCATION OF ACCESSIBLE AND NATURAL GREEN SPACE. (ONE CREDIT) |
| CRITERION 2 | A GREEN INFRASTRUCTURE PLAN IS DEVELOPED AS A PART OF THE MASTERPLAN. A SUMMARY OF THE CONSULTATION RESPONSES AND ANY CONSTRAINTS RESTRICTING THE PROVISION OF ACCESSIBLE AND NATURAL GREEN SPACE ARE EXPLAINED IN THIS DOCUMENT. (ONE CREDIT) |
| CRITERION 4 | THE MASTERPLAN IS DESIGNED TO ALLOW ALL RESIDENTS TO BE WITHIN WALKING DISTANCE OF GREEN SPACE VIA A SAFE AND CONVENIENT PEDESTRIAN ROUTE. (TWO CREDITS) |
| CRITERION 7 | THE GREEN INFRASTRUCTURE PLAN SETS OUT THE PROVISION OF THE DESIRED USES AND DESIGN SET OUT IN CONSULTATION. ANY DEVIATION FROM CONSULTATION RESPONSES IS REASONABLY JUSTIFIED. (THREE CREDITS) |
| CRITERION 8 | IN URBAN AREAS, THE ACCESSIBLE NATURAL GREEN SPACE STANDARD IS ACHIEVED. (THREE CREDITS) |

Table 5.4.5 Urban design related criteria in. BREEAM Communities 2012 checklist. Source: BREEAM Communities, 2012.
Table 5.4.6 Urban design related criteria in BREEAM Communities 2012 checklist. Source: BREEAM Communities, 2012.

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<thead>
<tr>
<th><strong>RE 06 – Resource Efficiency</strong></th>
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<tr>
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<td><strong>Land Contamination</strong></td>
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<td><strong>Criterion 1</strong></td>
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<td><strong>CRITERION 1</strong></td>
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<tr>
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**Step 3: Designing the details**

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<td><strong>CRITERIA 1-4-6</strong></td>
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<td><strong>CRITERION 3</strong></td>
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<td><strong>CRITERION 7</strong></td>
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<td><strong>CRITERION 8</strong></td>
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Table 5.4.9. Urban design related criteria in BREEAM Communities 2012 checklist. Source: BREEAM Communities, 2012.
### Table 5.4.10. Urban design related criteria in BREEAM Communities 2012 checklist. Source: BREEAM Communities, 2012.

<table>
<thead>
<tr>
<th>Step 2: Determining the layout of the development</th>
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<tbody>
<tr>
<td><strong>TM 02 – Safe and Appealing Streets</strong></td>
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<td><strong>Criterion 1</strong></td>
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<td><strong>Criterion 2</strong></td>
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<th>Step 3: Designing the details</th>
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<tbody>
<tr>
<td><strong>TM 03 – Cycling Network</strong></td>
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<td><strong>Criterion 1</strong></td>
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<th>Step 4: Access to Public Transport</th>
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<td><strong>TM 04 – Access to Public Transport</strong></td>
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<td><strong>Criterion 1</strong></td>
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<tr>
<th>TM 05 – Cycling Facilities</th>
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<td><strong>Criterion 1</strong></td>
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<td><strong>Criterion 3</strong></td>
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<tr>
<td><strong>Criterion 4</strong></td>
</tr>
<tr>
<td>2/3 bedroom dwellings - storage for 1 cycle</td>
</tr>
<tr>
<td>4+ bedroom dwellings - storage for 2 cycles</td>
</tr>
<tr>
<td><strong>Non-Residential Requirements:</strong></td>
</tr>
<tr>
<td>Up to 500 users - 1 space per 10 users</td>
</tr>
<tr>
<td>501 – 1000 users - 1 space per 15 users</td>
</tr>
<tr>
<td>1001+ users - 1 space per 20 users (one credit)</td>
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<table>
<thead>
<tr>
<th>TM 06 – Public Transport Facilities</th>
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<tr>
<td><strong>Criterion 1</strong></td>
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<td><strong>Criterion 2</strong></td>
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</table>
Table 5.4.11. Urban design related criteria in BREEAM Communities 2012 checklist. Source: BREEAM Communities, 2012.

**Criterion 3** Shelters will be provided at public transport stops, especially those close to key community focal points within the development. (No credits)

**Criterion 4** Shelters will be of adequate size to accommodate potential users of varying ages and disabilities. (No credits)

**Criterion 6** Shelters within the development will be compliant with items A – H (below). (One credit)

**Criterion 8** Shelters within the development will be compliant with items I – L (below). (Two credits)

"Item Description

A Shelters will be designed and sited to provide protection from weather conditions taking into consideration prevailing wind direction, splashes from passing vehicles and protection from the sun.

B Shelters will provide a safe and comfortable waiting area for users, in particular shelters will be well lit and allow sufficient ventilation to avoid overheating.

C Shelters will be visible to the surrounding environment and community.

D Shelters will not obstruct other area users such as pedestrians and cyclists and allow sufficient room for wheelchair users and those with prams/buggies to pass with ease.

E Shelters will have up-to-date timetabling information prominently on display in the shelter.

F Shelters will provide sufficient seating for the users of the development for all ages and disabilities, as judged through the consultation with service providers and the local authority.

G Street furniture will not be positioned where boarding/alighting is expected. Street furniture (apart from seating) should not be situated within the waiting area.

H Secure cycle parking structures are provided near the public transport shelters/facilities to allow for transfer between modes of transport. The number of cycle spaces accommodated should be determined by the likely users identified in the transport assessment.

I Litter bins will be provided by each shelter, positioned to avoid any interference with the use of the shelter. Regular refuse collection is negotiated with the local authority.

J Shelters will have real-time timetabling information feeds.

K Where the consultation identifies a significant risk of vandalism, CCTV that covers the shelter and surrounding area should be installed and the shelter should be constructed of vandal resistant materials.

L A renewable energy supply (with a storage capacity to work after dark) will be used to power the shelters lighting and real-time timetabling displays."
Interview guide for Appendix

Part 1

Masthusen, Malmö

- For the development of Masthusen it was used the British BREEAM Communities scheme. Was it adjusted in a Swedish context first in order to work properly?
- Was it considered also a pilot case in order to check the British scheme in a Swedish context and adapt it to it?
- Is it possible to make a quick description of the stages that are going to be followed for the development of Masthusen district? For example if you started with a development plan first and then a detailed plan, when BREEAM was introduced in the process, a follow-up or consultation etc.
- If you have to point out the most particular characteristics of this area what would that be?
- If you could summarize the main aim of this development in a few words what would that be?
- What would you point out as “innovation” regarding this project?
- Regarding the design plans is it possible to make a quick description of the different stages that were followed and are going to be followed for the design of Masthusen district? Are they influenced by the process that indicates BREEAM Communities?
- What are the challenges/ difficulties that are to be faced/ occur when it is about to transform a former industrial area to an urban environment?
- And in that case, how BREEAM Communities can lead the design process and prioritise between different procedures?
- When do you think is the proper time in the design process to focus on the standards of the BREEAM Communities and integrate them in the process?
- There are criteria in BREEAM Communities that affect the design process in specific and therefore the final image of the area. For example: The distance from each building entrance to a compliant transport node must be between let’s say 100m. In that case do the architects work in accordance to BREEAM Communities from the beginning of the design? Because they must affect very much the masterplan of the area.
- Was a design workshop used as part of the community and stakeholder involvement/ consultation process (GO 02- Cr 7) in any of these two cases in some stage?

Kabeln, Sundbyberg

- Is it possible to make a quick description of the stages that are going to be followed during the development of Kabeln district?
- The BREEAM Communities checklist used from Diligentia for the development of Sundbyberg is based on the British scheme as in the case of Masthusen?
- Can you briefly point out some of the most particular characteristics of this area?
- If you could summarize the main aim of this development in a few words what would that be?
- What would you point out as “innovation” regarding this project?
- What are the challenges/ difficulties that are to be faced/ occur when it is about to transform a former industrial area to an urban environment?
- And in that case, how BREEAM Communities can lead the design process and prioritize between different procedures?
- When do you think is the proper time in the planning process to focus on the standards of the BREEAM Communities and integrate them in the process?
- There are criteria in BREEAM Communities that affect specifically the design process and therefore the final image of the area. In that case do the architects work in accordance to BREEAM Communities from the beginning of the design? Are they urged to work in parallel with BREEAM Communities scheme for example?
- Was a design workshop used as part of the community and stakeholder involvement/ consultation process (GO 02- Cr 7) in any of these two cases in some stage?
Stockholm Royal Seaport

- Do you think there is something specific regarding the area that makes it suitable for this kind of development? Can you briefly point out some of its most particular characteristics? Like for example its position and the connection to the sea?
- Is it possible to make a quick description of the stages that are going to be followed for the development of Royal Seaport?
- What are the challenges/difficulties that are to be faced/occur when it is about to transform a former industrial area to an urban environment?
- I read that the City of Stockholm in collaboration with KTH and the Clinton Climate Initiative within the framework of the global Climate Positive Development Program developed a new follow-up model that complies with the environmental requirements. Can you give me some info regarding this model?
- As I am informed for the case of Stockholm Royal Seaport they decided to test BREEAM Communities tool and decide whether they are going to use it or not. Can you explain more what are the process regarding the beta test for BREEAM Communities and why you decided to reject it?
- Did you consider the idea of using an assessment tool (such as BREEAM, LEED etc.) as a backbone for the development of Royal Seaport? (if yes- why decided not to use it?)
- If you could summarize the main aim of this development in a few words what would that be?
- What would you point out as “innovation” regarding this project?

Part 2

General questions

- According to your personal point of view, can the urban design be still the same with and without the use of BREEAM Communities? Or how urban design can be affected by the use of BREEAM Communities?
- More specifically what are the differences in urban design process and outcome between the communities that were designed and developed based on BREEAM Communities standards and the communities developed without the tool? (for architects & urban designers)
- And in the latter case, where BREEAM Communities has not been used as a tool, do you think that it would be possible to enhance further the function of these communities towards a more sustainable way?
- What do you think are the benefits and the drawbacks emanating from the use of BREEAM Communities?
- The use of BREEAM Communities requires additional time during the planning process. Do you think this is a drawback that discourages the developers to make use of it?
- Moreover do you think that the additional cost regarding the application of BREEAM Communities works like a barrier for developers?
- Regarding management and marketing issues how does BREEAM Communities give value to these? Does the use of such kind of tools affect the general image and the value of the developing community to construction companies, developers and most of all future residents?
- What have you learnt from the assessment process?
Safety Plan for Masthusen

Core – Kärna – The core describes the present situation of the area and the problem statement for further development. The core consists of the basis of the vision and values which anchors the project sites. Moreover, it refers on how the area is related to the environment and the rest of the city (Malmö stad, 2011).

Masthusen possesses a central location at the Western Harbour, which is a strategic position for the area and consequently it makes it an important piece of the puzzle for connecting the Western Harbour parts (Malmö stad, 2011). This plan is crucial regarding the development of the area and will influence the master-plan aiming to the creation of an important node in the Western Harbour. Therefore, it could be assumed that the urban design will be affected by values such as good connections, welcoming open public spaces, mix of uses etc. that will enhance the attractiveness of the area. According to Malmö stad (2011) “a great challenge is to tie together Masthusen with the surrounding neighbourhoods across the street space and also design the streets in such a way that will make them attraction and destination themselves” (Malmö stad, 2011).

Vision – Vision – The ring around the Core refers to the vision for the planning area. The vision describes the engagement of all forces and interests to work in the same direction and formulate the character, the design and the qualities of Masthusen (Malmö stad, 2011). The vision regarding the development of Masthusen is to make it a multifunctional hub.

Values – Värden – The ring outside the Vision describes the guiding values of the vision process. They plan the program’s main priorities and intentions of the work toward the vision. The values are also tied up to the physical structure of three building blocks, streets, places and buildings. In order to summarize the main features of the structure it is developed a value plan.

Regarding the urban design aspect, the value plan comprises details regarding the streets-planning, the public locations and architectural characteristics of the area. According to value plan, the streets through Masthusen are designed in such way in order to fill criteria regarding accessibility, safety, attractiveness and to have pedestrians on focus. Moreover, as Malmö stad (2011) stated, in Masthusen there will be a variety of public spaces, urban greenery and active communities designed in way that will enhance the attractiveness of the area and meeting places. Finally, Malmö stad (2011), refers to “a good architecture with people in focus”. Some of the main features that must be arranged regarding architecture are: the density of the buildings that should facilitate the flow of people aiming to the creation of a socially and economically sustainable city (Malmö stad, 2011). Moreover, for the buildings, according to Malmö stad (2011), the structure is designed to be flexible in order to take various uses during different time periods.

Strategies – Strategier – The following ring in the model represents the strategies which are the tools that seek to create the qualities that are described in the vision and values. The strategies as a tool can be used in order to prioritize future planning and development of the built environment, including three main categories: streets, places and houses.
These strategies, includes aspects regarding the urban design, that must be taken care of during the planning process such as lighting, bicycle parking, low-priority to cars etc. and moreover, the places should be designed in order to be opening and inviting, allowing different kind of functions, adjusted always to human scales. Furthermore, the houses and all the other buildings, are planned to be designed based on sustainable patterns (Malmö stad, 2011).

**Strategic projects and tools** — Strategiska Projekt — The outermost ring describes the strategic projects and tools for planning and design. The strategic projects require additional focus in order to achieve the vision and the tools are the documents needed for the design process such as site analysis and zoning.

**Follow up** — Uppföljning: One of the most important steps of the development plan is the continuous evaluation and feedback to Diligentia and the city of Malmö regarding the design and planning process. The Safety Program is meant to be used as a basis for further planning for the zoning and building permits (Malmö stad, 2011). Moreover, an array of values for guiding the strategies and the implementation of the vision have been developed by the City Planning, and will be adapted to Masthusen (Malmö stad, 2011).

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**Strategies**

“**Streets**: The pedestrians are in focus of planning and design and there are mixed uses everywhere in order to make Masthusen multifunctional. Moreover, of major importance is to make the area secure and in order to achieve this there are important issues that must be taken care of during the planning process such as lighting, bicycle parkings, low-priority to cars etc.

**Places**: The places, like squares, urban greenery etc. are designed in such a way in order to be open, inviting and to allow different kind of functions and activities. In addition to this, issues like human based scales, good microclimate and attractive environment both winter and summer are of great importance for the design.

**Houses**: The development is designed as closed blocks based on existing structures in order to divide the area into more properties. Moreover, the buildings in the area are designed based on sustainable patterns.” (Malmö stad, 2011).
BREEAM preferred by European real estate investors

A survey of more than 100 real estate investors across Europe has shown that a huge majority are in favour of certification schemes that recognise building sustainability. Almost two-thirds say their preferred scheme is BREEAM, the standard which is rolled out through a network of European and scheme operators. The findings of this independent survey by international law firm DLA Piper, have been published in a report called Towards a Greener Future, which was launched last week at MIPIM 2014 in Cannes.

The report concluded that market demand from occupiers — rather than issues such as government legislation — is the driving force behind delivering sustainable real estate. Many businesses recognise not only the lower operational costs associated with sustainability, but also the role the sustainable buildings can play in communicating the brand and business ethos.

As sustainability becomes a key issue for occupiers it also impacts on investors, with market demand driving sustainable real estate to become seen as the best investment. Of those responding to the survey, 71% said they would be willing to incur higher investment costs for sustainable real estate. Many identified increases in capital and income, combined with lower operational costs and higher rents, as enabling them to spend more on sustainability.

An overwhelming 88% of respondents consider green certification to be important when developing or investing in new buildings. However there is concern at the number of schemes that have been developed on national lines and then exported. Most investors want a single certification scheme that allows ‘level playing field’ comparisons and benchmarking.

(BRE Global, 2014a)