

LIVEABLE URBAN AREAS AND NEW HOUSING TYPOLOGIES

A Case Study In Vila Nova de Famalicão, Portugal

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I dedicate this work to:

My parents who dedicated their lives to give me a chance to get educated,

To my professors and colleagues in the master program

For the support and the knowledge they gave me.

To my grandfather, May his soul rest in peace.

Hasan Mansour

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ABSTRACT

In contemporary urban planning literature, a significant concern is being paid towards the concept of Liveability. The quest for making our urban environments more liveable has become a key urban issue throughout the world. We, as urban planners, are in a permanent attempt to adapt our living areas to cope and serve our human needs and development. The challenge that is facing the development of urban communities is not only in the executive businesses, but it is also the interaction of various development elements to create a society that is characterized by the quality of life on socio-economic, environmental and cultural aspects. Therefore, creating liveable environments is an ongoing and complex process associated with a large number of factors and variables that researchers embark on studying.

Hence, the importance of housing appears in creating liveable urban areas, for being the core of any urban community. However, most of the studies done on the subject of liveability tried to increase the quality of life in urban communities by increasing the qualities of the characteristics, physical and social components of the urban environment and the interaction between the various activities in this particular community and the surrounding ones.

In this dissertation, I am going to study the impact of new housing projects and the importance of selecting housing typologies in creating liveable urban communities and increasing the quality of life. I will clarify how housing typologies play a vital role in shaping the urban environment and increasing the effectiveness and quality of the spatial characteristics of the site to get to a liveable urban environment that meets the needs of its citizens and create friendly, ecological and safe places.

In this endeavour, I will take a case study of a predicted housing project near the historic center of Vila Nova de Famalicão. This site has a very big potential for development as a housing complex but is suffering from many problems concerning socio-economic, security, and accessibility. Therefore, this dissertation will contain two sections:

- **The theoretical section;** in which I will delve into the concepts of liveability and new housing typologies and explain them clarifying the importance of the mutual relationship between them in creating liveable communities and increasing the quality of life.
- **The practical section;** where I am going to analyse the site of the case study and propose an urban solution based on the findings in the theoretical section in order to increase the liveability of this area.

Keywords: Urban Liveability, Place-making, Housing Typologies, Urban Design.

RESUMO

Na literatura contemporânea sobre planeamento urbano, tem sido prestada particular atenção ao conceito de Habitabilidade. A busca pelo melhoramento das condições de habitabilidade do nosso meio ambiente urbano tem-se tornado uma questão urbanística fulcral em todo o mundo. Nós, enquanto planeadores urbanos, procuramos constantemente adaptar as nossas zonas habitacionais, por forma a que possam ser adequadas e úteis às nossas necessidades humanas e ao nosso desenvolvimento. O desafio que hoje enfrenta o desenvolvimento de comunidades urbanas não está apenas relacionado com uma questão executiva, mas também com a interação de vários elementos de desenvolvimento que concorrem para a criação de uma sociedade caracterizada pela qualidade de vida relativamente a aspectos sócio-económicos, ambientais e culturais. Como tal, a criação de ambientes propícios à habitação é um contínuo e complexo processo associado a um elevado número de variáveis e de fatores sobre os quais os investigadores se debruçam.

Consequentemente, surge a importância da habitação na criação de áreas urbanas habitáveis, por ser esta o núcleo de qualquer comunidade urbana. Contudo, muitos dos estudos realizados em torno da questão da habitabilidade propuseram um aumento da qualidade de vida em comunidades urbanas por meio do aumento das qualidades das características, dos componentes físicos e sociais do meio ambiente urbano e da interação das várias atividades entre uma comunidade em particular e as comunidades que a envolvem.

Nesta dissertação, estudarei o impacto de novos projetos habitacionais e a importância da seleção de tipologias habitacionais na criação de comunidades urbanas habitáveis e no aumento da qualidade de vida. Esclarecerei de que forma as tipologias habitacionais desempenham um papel vital na formação do meio ambiente urbano e no aumento da eficiência e da qualidade das características espaciais do local, por forma a que seja criado um meio ambiente urbano habitável que satisfaça as necessidades dos seus cidadãos e que crie espaços amistosos, verdes e seguros.

Neste projeto, tomarei em conta um caso de estudo relativo a um projeto habitacional previsto para perto do centro histórico de Vila Nova de Famalicão. O local tem um grande potencial para se desenvolver enquanto complexo habitacional, embora sofra de diversos problemas sócio-económicos, assim como de problemas relativos à segurança e à falta de acessos. Como tal, esta dissertação irá conter duas secções:

- **A secção teórica;** na qual irei inquirir acerca dos conceitos de habitabilidade e de novas tipologias habitacionais e explicá-los, clarificando a importância da relação de mutualidade entre esses conceitos na criação de comunidades habitáveis e no aumento da qualidade de vida.
- **A secção prática;** na qual irei analisar o local do caso de estudo e propor uma solução urbanística baseada nas descobertas feitas na secção teórica que melhore as condições de habitabilidade desta área.

Palavras-chave: Habitabilidade Urbana, Placemaking, Tipologias Habitacionais, Design Urbano.

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1

INTRODUCTION

1.1. GENERAL FRAMEWORK

Creating a liveable urban environment is a complex and multi-dimensional process, which includes a conscious strategy and operations with specific goals and objectives to create the best possible living place from the economic, social and environmental aspects. This process occurs through models that support complex and adaptive urban planning in a form of a series of structural and functional changes. These changes affect the components of the place by achieving the maximum benefit from its characteristics and available resources to bring it to the fullest and best possible use in order to achieve the satisfaction of economic, social, environmental and cultural welfare.

The English Parliament in 2003 defined the concept of liveability as being "*about building stronger local communities and enhancing the quality of life through action to improve the quality of local environments and the places where people live.*"

As this definition might seem understandable and straightforward on paper, achieving this into reality is much more complex. Most recent studies on the topic of liveability were primarily based on objective indicators through counting and analysing the physical and socio-economic features that contribute to a specific liveable environment. On the other hand, some researchers as (Namazi-Rad & Perez, 2016) (Day, 2013) (Oakley, et al., 2013) argue that these objective indicators should be correlated and interacted with subjective indicators. People's impressions and satisfaction of where they live is a crucial factor in achieving liveability. (Hur, Nasar and Chun 2010) Identified satisfaction as being the overall evaluation of residents of their living environment. As urban planners, our priority lies in producing a liveable urban environment for people. We must know who these people we are creating communities for are, and how they will receive and interact with this environment.

In the case of this research, and due to the specific nature of the case study, where a private company is the developer and the owner of a part of the land which is proposed for a residential complex, the challenge lies in finding a sustainable housing urban solution that achieves the integration of both objective and subjective indicators in order to achieve not only the resident's satisfaction, but also economic interests of the company. As a result, the place should become a more liveable place that attracts people, and its economic value will be higher and suitable for the investment of the company.

However, it is not possible to study all the aspects of the liveability in this dissertation. Therefore, this study will focus on the most important problems that negatively affect the liveability of the area and which are common problems in many other urban areas. Hence, the main focus will be on the issues of:

- **Accessibility:** the area has many issues regarding the accessibility and its relation with the surrounding. It is isolated from the center of Vila nova de Famalicão by a highway. In addition, there are not enough pedestrian linkage between the green space –which is an important element in the site- and the project land, which leads to many problems and imposes on us to improve the accessibility in this area.
- **Safety:** the lack of accessibility led to the lack of using the green area in the site, which in turn, transformed it into an isolated shelter for drug dealers. Therefore, the study of the green space and its relation to the housing complex will be a crucial issue.
- **Green design (Sustainability):** Sustainability is an important aspect that can determine the overall quality of any urban project. At the same time, promoting sustainable housing means that we are promoting a more liveable environment.
- **Community:** as noted earlier, the satisfaction of people is the core interest of the urban planners. Therefore, the design of the project should care about and promote the community interaction and the physical elements should support the interaction of people with their urban environment. This factor's analysis will be merged with all above factors as it is an essential interest of each of them. See Figure 1 **Error! Reference source not found.**

Many researchers have studied the importance of the previous points and come up with many guidelines and methods to achieve them. In this dissertation, I am going to move from the conceptual ideas and build a practical example that achieves these points. Therefore, I will be more focused on the physical design elements than the conceptual ones. The main tool to achieve my goal will be a new housing typology that goes in line with the site and commensurates with its physical and environmental characteristics, and supports the application of the preceding points and interacts with them in a unity that represents the meaning of liveability.

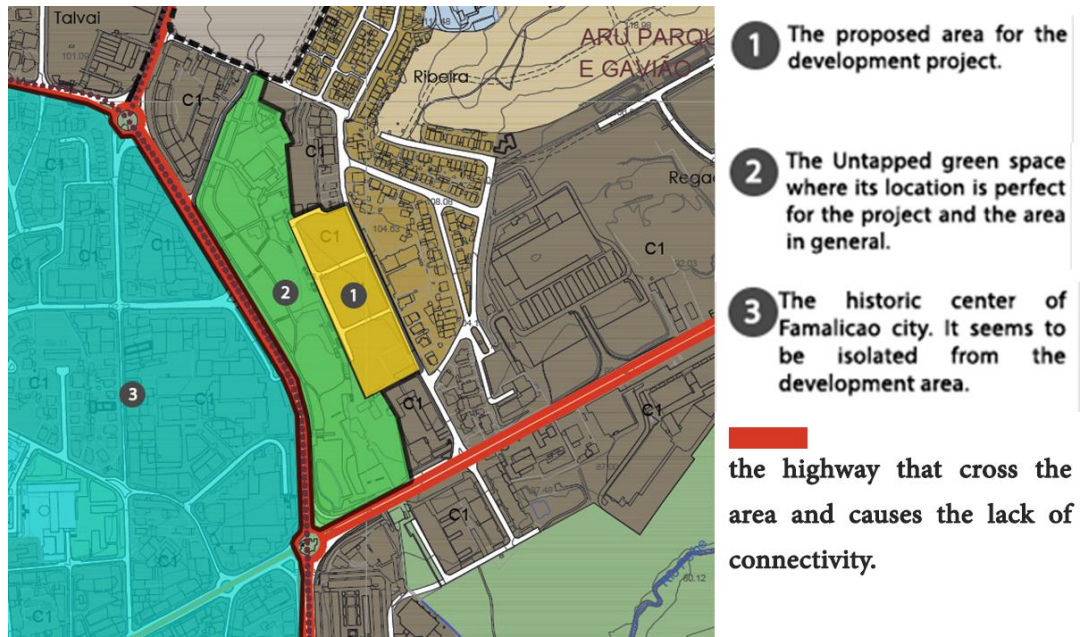


Figure 1: Analysing the site

The importance of the new typology here is high, as the form of the buildings plays a crucial role in shaping the whole environment. (Brownell 2007) argues that the type of the building is much more important than its proposed use. In his argument, he cited a number of cases where the use of the building has changed dramatically in the United States of America without changing the form of the building. On the other hand, many urban planners and architects believe that the use of the building must determine its shape. In their argument, they cite the famous saying of Louis Sullivan’s “Form follows function”. In my opinion, the form of the building does have a great importance in the urban environment, but this does not mean that its use and the kinds of activities that happen in it are not as important. The form of the building must be compatible with its use, and is affected by it.

This attention towards the importance of the buildings types on the overall urban environment shifted the minds of architects and urban planners to produce new housing typologies that serves people more with an efficient economic cost. This issue became very popular especially after the economic crises in 2008 which affects many countries including Portugal. In the case of Vila nova de Famalicão, which is a small city, this approach might solve a lot of urban problems with lower cost.

1.2. OBJECTIVES

The main goal of this work is to reach a liveable urban design proposal for the case study area in Vila Nova de Famalicão, which can solve the main threats on the liveability of the area through using new housing typologies and some small urban interventions in the surrounding urban environment.

The theoretical part of this work aims to provide a better understanding of the concepts of liveability and new housing typologies, and clarifying the importance of the mutual relationship between them and its role in increasing the quality of life in urban communities.

The focus of the study of Liveability and housing typologies will be on a number of factors that are strongly related to this debate. These factors are (Accessibility, Safety, Community, and Sustainability) which have a crucial role in measuring the liveability of any urban community.

The results of this study will represent a number of possible interventions through housing typologies or some additions to the urban environment which can be applied in our case study or other similar urban areas.

This results will be presented in an urban design proposal for the case study in Vila Nova de Famalicão.

1.3. METHODOLOGIES

To reach the goal of this research, the study was divided into two main sections:

Theoretical study: in which I reviewed the concepts of Liveability and housing typologies in general, and then, studied the effects of (Accessibility, Safety, Community interaction, and sustainability) on both concepts in order to reach a number of results and intervention steps to be applied to the proposed case study.

Practical study: Which in turn was divided into two sections:

- **Case study analyses:** where I used urban planning diagrams and plans to analyse the area objectively. In addition, I made a field visit where I stayed at Vila Nova de Famalicão for 5 days and made a statistical study to the area and made some interviews with the people who used it. Also, In order to assess the liveability of the garden which is located in our case study area, I made a comparative study between the number of users of this garden and another garden that is located 10 minuets walk from it. An evaluation of the study factors represented by (Accessibility, Safety, Community interaction, and sustainability) had been done to the area And the results have been presented as a SWOT diagram.
- **Urban design Proposal:** in which I reached the main goal of this work which is finding an urban design proposal for the study area taking in consideration the result I found in the

theoretical study and the case study analyses. This proposal includes an urban design of the housing units where the typology of these units improves the liveability of the area by promoting the (Accessibility, Safety, Community interaction, and sustainability) factors. In addition to a number of urban intervention to the garden in the study area.

1.3. STRUCTURE OF THE WORK:

The present work is divided by chapters organized as follows:

- The first chapter includes the initial guidelines of the work which are the general framework, objectives, methodology and the current structure adopted;
- The second chapter comprehends a deep analysis of the origins of the liveability concept, the current understanding and practice of the concept and the effects of four main factors on liveability (Accessibility, Safety, Community interaction, and sustainability) ;
- In the third chapter, a clarification of the concept of housing typologies was introduced and a study of the evolution of new housing typologies in Europe and Portugal. In addition, the role of housing typologies in achieving liveability was deeply discussed through identifying the ways that we can use housing typologies to achieve Accessibility, Safety, Community interaction and Sustainability;
- The fourth chapter represents the analyses of the case study. A deep analyses has been done using the plans of the area and a field visit. In addition to a comparative study of the Garden in the study area with another garden in the city of Vila Nova de Famalicão.
- The fifth chapter includes my urban design proposal for the area explained by schemes and plans done in accordance with the results found in previous chapters.
- At the end, the sixth chapter contains the conclusions of the work and the suggestions for future studies.

2

UNDERSTANDING THE LIVEABILITY CONCEPT

2.1. HISTORICAL OVERVIEW

In a linguist simplified form, and according to the online etymology dictionary, the term “liveability” was first used in the 1610s to express the ability to survive. Then in the 1660s, it took the meaning of “conducive to living”. Only in 1814, it expressed the meaning of "suitable for living in" as mentioned in Jane Austen’s novel "Mansfield Park". *"Very much indeed. You are a lucky fellow. There will be work for five summers at least before the place is liveable."*

Jane Austen/ Mansfield Park p.206

However, words are just abstract shapes that represent deep meanings and concepts, and in the case of liveability, it is a very profound and complicated one. When we are talking about the concept of liveability, it is obvious that it as a very complicated subject and hard to be fully realized. Basically, when we think about liveability we are fundamentally asking a question that has been the center of researcher’s attention in the last years “*how we should be housed in order to live as human beings?*” (Demiene 1957). However, this question is not a new one. If we think deeply, we will find that this particular question is the base of the evolution of urban communities since ancient times. It is the same question that traveler and cave humans asked themselves and pushed them towards stability and building houses and agricultural communities. According to (White 2006), since that time people and researchers tried hard to understand the idea of “happiness.”

Despite the existence of a vast number of research, studies, classifications and books on the subject of liveability, the researchers that are studying the solid start for the emergence of this term in the urban scientific studies are few. There is no specific date for using the term but what is obvious that it has existed since time immemorial as a concept. According to (Ley 1980), in the 1960s in America, a new

action movement called (TEAM) had emerged as an urban reform party in Vancouver. This movement used the concept of liveability as a way to face the growth-centered approach in an attempt to promote the concept of planning for people not for economy. Later in 1970, the term was used by the American Vice President in an international conference about cities, and it was included in a welcoming sign in Philadelphia airport that said “Welcome to America’s most livable city”, and since then, liveability became the central concept in urban studies in America. At that time, European countries had been more advanced in regards to the liveability subject. According to (Kaal 2011), liveability was the main issue in the first European Congress of rural sociology in Leuven, Belgium, in 1958 where the discussion about the unviability of small towns emerged. This leads us to believe that the first appearance of the concept of liveability in Europe was in the rural studies. According to (Tonkens 1960), that was in the 1950s as a reaction to the urbanization trend, and the difficulties faced by rural areas in providing the level of services and the necessary infrastructure for its residents comparing to cities. At that time, many researchers criticized liveability as being a complicated subject and a confusion point as (Gijswijt-Hofstra 1965) noted, which according to (Tonkens 1960) paved the way for the urban liveability to take the lead in the 1960s after declining the interest in the liveability in small and rural urban communities.

Since then, liveability has gained a central role in urban studies, especially, urban liveability. Nowadays, the word “liveability” is being traded extensively and intensively in the urban planning literature. However, According to (Hovey 2008), the use of the word Liveability was not confined to urban planners. *“Organizations sprout up everywhere to promote more livable communities. Public policies are aimed to improve the livability of our cities. Journalists, politicians, and commentators foment an ongoing public discussion about the meaning of livability, who has it and who does not. And in true American fashion, news organizations, think tanks, academics, and others produce a raft of rankings to tell us exactly which cities are the most livable and which are not.”* (Hovey 2008).

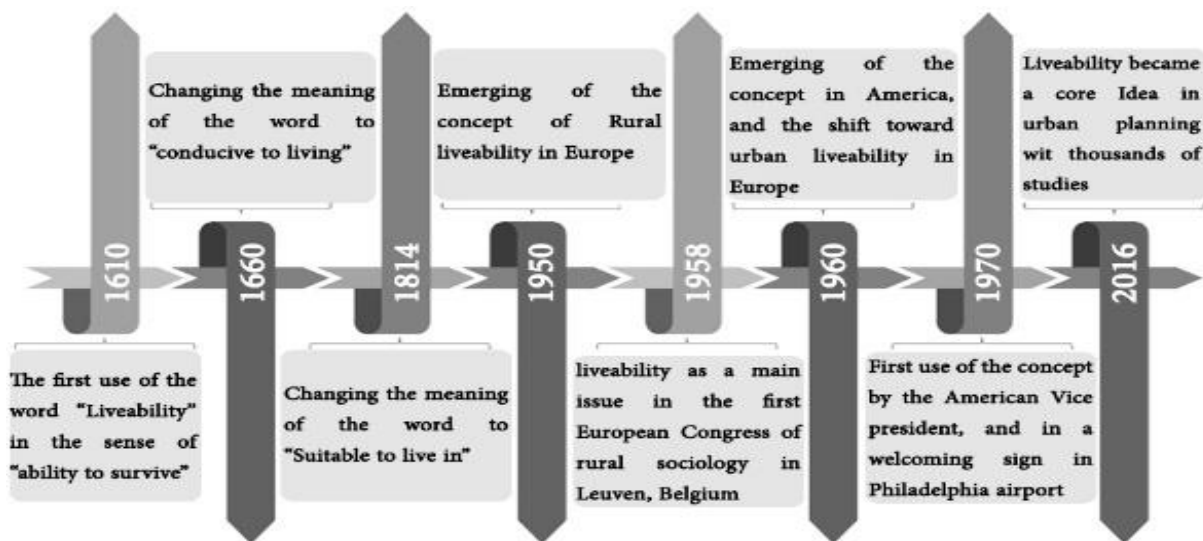


Figure 2: Timeline of the evolution of the concept of Liveability. Source: The author.

2.2. THE MEANING OF LIVEABILITY

Despite the widespread use of the term “Liveability”, not only in the scientific and research community but in the various areas of our daily lives, it is clear that concept is still considered as a complicated issue and not easy to be understood. There is a wide divergence of views between researchers in defining the concept of liveability and how it could be measured, applied, and the type and importance of the factors affecting it and affected by it. **(Kashef 2016)** illustrated that liveability is still a vague term that is used by different groups and in different contexts.

However, many researchers noticed that some people, organizations, and even policy makers are using the idea sometimes without understanding it or for their own benefit. Nowadays, it is easy to find a myriad of guide books, web rankings, and place ratings regarding the issue of liveability, and it is not surprising to see that these classifications differ significantly among themselves. This happens because they are done by some enterprises which are not always very serious as **(Fisher 2005)** pointed out or largely artificial as **(Pierce and Bell 1987)** concluded.

What makes the understanding of the concept of liveability a hard issue, is being a divergent subject associated with a significant number of subjective, objective, and environmental factors and variables. As **(Papachristou and Rosas-Casals 2015)** and **(Ruth and Franklin 2014)** referred, liveability is pretty close to and associated with many other ideas such as; well-being, life satisfaction, quality of life, positive and negative affect, utility, welfare, hedonism, eudaimonia, biodiversity, ecosystems etc.

This deployment of the term “liveability” and the growing attention towards it emphasizes on urban researchers the necessity of finding a clear understanding of this concept. Many definitions have been developed to define the concept of liveability. The overall idea of these definitions as **(Namazi-Rad and Perez 2016)** noted, is how to create a valid environment for living including all the primary needs, activities, and features that the residents of this environments desire in order to achieve satisfaction.

Putting it this way makes the concept looks much simpler than it really is. Despite that all definitions roll around this Idea, there is a big difference in views between urban researchers regarding the way we can assess and achieve liveability **(Ruth and Franklin 2014)** and **(Kaal 2011)**. The roots of the dispute go back to the very first emergence of the concept of liveability and continues to exist until now. The dispute centered on how to identify the key factors by which liveability could be achieved. Some researchers in the field of urban planning and urban sociology like **(Newman 1959)** and **(Brownell, Redeveloping Modern Housing Sites. Improving the Livability of the Ground Plane 2007)** believe that achieving liveability is done through focusing on objective conditions of the urban environment. On the other hand, other researchers like **(Namazi-Rad and Perez 2016)** and **(Tonkens 1960)** argue that the main factor in achieving the liveability is related to the extent of people's perceptions of their environment and the way they feel about it, which are called “Subjective indicators”.

In fact, if we looked at the subject in a neutral manner, we can say that both objective and subjective indicators are very important in observing and achieving liveability. However, it seems very hard to achieve liveability through any of them individually. According to (Namazi-Rad and Perez 2016) (Tonkens 1960) and (Groot 1967) objective approach to achieve livability is impossible to be applied as the only way to truly assess liveability in an urban environment is based on its resident's impressions and the way they perceive their environment. On the other hand, the followers of the objective approach argue that subjective assessment of liveability is impossible as people are different, and what some may admire, others may dislike. This leads us to say that the focus should be on obtaining the degree of balance between these indicators so that we get the best solution for the urban environment taking in consideration its physical structure and the different natures of its inhabitants. This could be done by reaching out a set of objective and subjective values that the vast majority of people would agree on (Ruth and Franklin 2014) and (Kashef 2016).

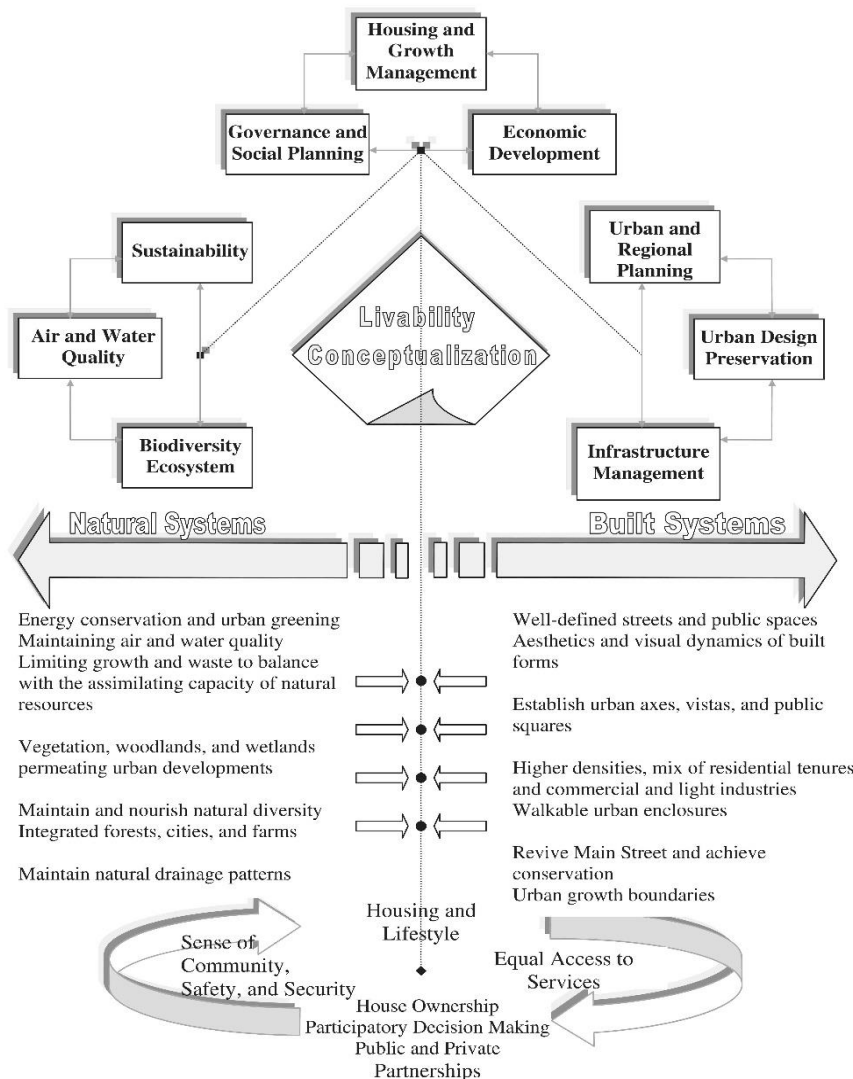


Figure 3: Liveability conceptual diagram. Source: (Kashef 2016)

Ruth, Franklin, and Kashef defined these values as “good housing, liable employment, safe neighbourhood, opportunities for social interaction, easy access, well-being, and any other necessary component of any community.

Generally, we can say that the concept of liveability nowadays is being observed from four main trends:

- **The Idealistic trend (subjective):** which most of us as urban planners believe in, and in which we try to find out the best possible conditions for human living. We care about the values and the basis of urban planning and that the first approach and main aim is people, and our business is the provision of justice, equality, equity and development of the urban environment with all its components so that it could be in the best case of the social, physical and environmental aspects. Those who follow this trend are greatly concerned about the people’s perception of their environment. *“In the end, the livability of a situation can only be judged from the judgement of those involved. It is impossible for a researcher to come to a completely objective judgement of the livability of a particular situation based on a set of criteria”* (Groot 1967).
- **The pragmatic trend (Objective):** In which we look at liveability in an abstract analytical perspective depending on the data available to us. In this trend, the objective indicators are more valued than the subjective ones, due to the fact that the subjective indicators are retrieved from people. It is all about asking the people how they feel and what they want (Namazi-Rad and Perez 2016) (Layard 2010). Here, a problem comes out regarding the accuracy of people’s reactions. What is suitable for one is not necessarily suitable for another. People are different, and their ideas are different too. In addition, according to (Kirita and Endo 1995) and (Rhodes, et al. 2003), people like to show their optimism and happiness to the world. When questionnaires are asked personally, we get more positive responses than in the questionnaires that are made online or by e-mails, also, it was observed that we get more positive feedback when the surveys are done by an interviewer from the opposite sex (Hugenberg and Sczesny 2006). This is why many researchers rely more on the objective indicators than the subjective ones because they are able to be counted accurately.
- **The balanced trend:** which the followers of this trend believe in the importance of both the subjective and the objective indicators in achieving liveability. The main idea is to create a balanced use of both of them in order to reach a liveable community objectively and subjectively.
- **The exploitative orientation:** This is mainly about the policy makers and corporations that use the idea of liveability in their agendas negatively. Many researchers, such as (Uitermark 2009), have criticized the use of the concept of liveability by governments and housing and construction companies in support of their own interests and profit. (Hankins and Powers 2009) and (McCann 2004), debate that the idea of liveability is used to serve the elite and rich classes of the society who follow an urban growth

agenda and use liveability as a tool to justify a policy of unilateral policy, rather than strengthening the collective responsibility and civic morality.

In my opinion, liveability is pretty much like other concepts in urban planning literature such as sustainability and inclusive city etc; they are all very close and related to the utopia concept. All of these concepts are close to idealism, which is beautiful, and flirts with our human aspirations and feelings. We are all dreaming of living in an urban environment of justice, equality and economic, social and environmental prosperity which doesn't really exist in our urban communities. *"Giving a general description of a liveable urban environment is almost like sketching utopia: liveable places are safe and secure, have a decent infrastructure, high level of service provisions and are economically viable and environment-friendly"* (Kaal 2011).

In addition, the way we deal with the concept of liveability and the argument about it derogate from its noble meaning as a way to create better urban communities that. For example, when we agree with (Kashef 2016) and (Ruth and Franklin 2014) with their method of creating a general set of values that can lead us to achieve liveability, then we can say that the researchers who values the subjective indicators of liveability more than the objective ones are dealing with liveability as a kind of unnecessary luxury. On the other hand, the researchers who value objective indicators more than the subjective ones deal with it a rigid physical element. I believe that as people are different, urban environments are different too. Each urban community has its own character, essence, soul, individuality and distinctiveness from other ones. This disagreement affects the ability of people to understand the liveability and gives the space to the people who are using this concept for their benefit to do that easily.

I believe that achieving liveability should be done by studying the targeted community with its physical, environmental, social and economic components, in addition to the time factor, or the history which is related to the identity of the place and its originality. After all, any urban community that has people residing in it is a liveable community to some degree (Chaffer 2015). What we should do is assessing the main factors affecting the liveability of this particular community and improving it in order to become attracting factors for living, not a threatening one which increases the quality of life in this community. The Idea is not reaching perfection in every aspect of the urban environment, it is about enhancing the factors that negatively affects the liveability, otherwise, what is called liveability, in this case, is a kind of unnecessary luxury and goes in the favour of housing or construction corporates who uses this as a way to facilitate the "selling" of places (Kearns and Philo 1993).

By applying this criteria to the case study in this research, and from the observation of the area and the information provided from Mota-Engil Company, I found that there are three main factors affecting the liveability of the area, which are: Accessibility, Safety, and social interaction. In addition, and as the proposed use of this land is to be a housing complex, I believe that adopting sustainability and green

design feature can contribute positively to the quality of life in the area. Therefore, the main focus of this research will be toward these factors and how they could contribute to the liveability of the study case area and in other places in general.

2.3. DESIGN FOR ACCESSIBILITY, SAFETY, COMMUNITY, AND SUSTAINABILITY

The discussion about the subject of liveability is spreading globally. Everyone became aware of the impact of the urban environment on us as people. (Hiss 2010), in his book “The experience of place” illustrated the importance of the built environment on the human behaviour and our sense of safety, our social interaction with others and our productivity. As we said earlier, the concept of liveability is very complicated and linked to many other concepts and variables that are in turn very complicated and consists of a number of different elements and objects. Accessibility, safety, community interaction and sustainability are very important concepts that closely associated with liveability, and I am going to study them particularly, because they are the main important problems that threaten the quality of life in the study case area. Anyhow, the concept of liveability is not limited to those factors, but it includes many of other social, economic, physical and environmental factors which are interdependent and interrelated with each other and that together constitute a liveable urban environment.

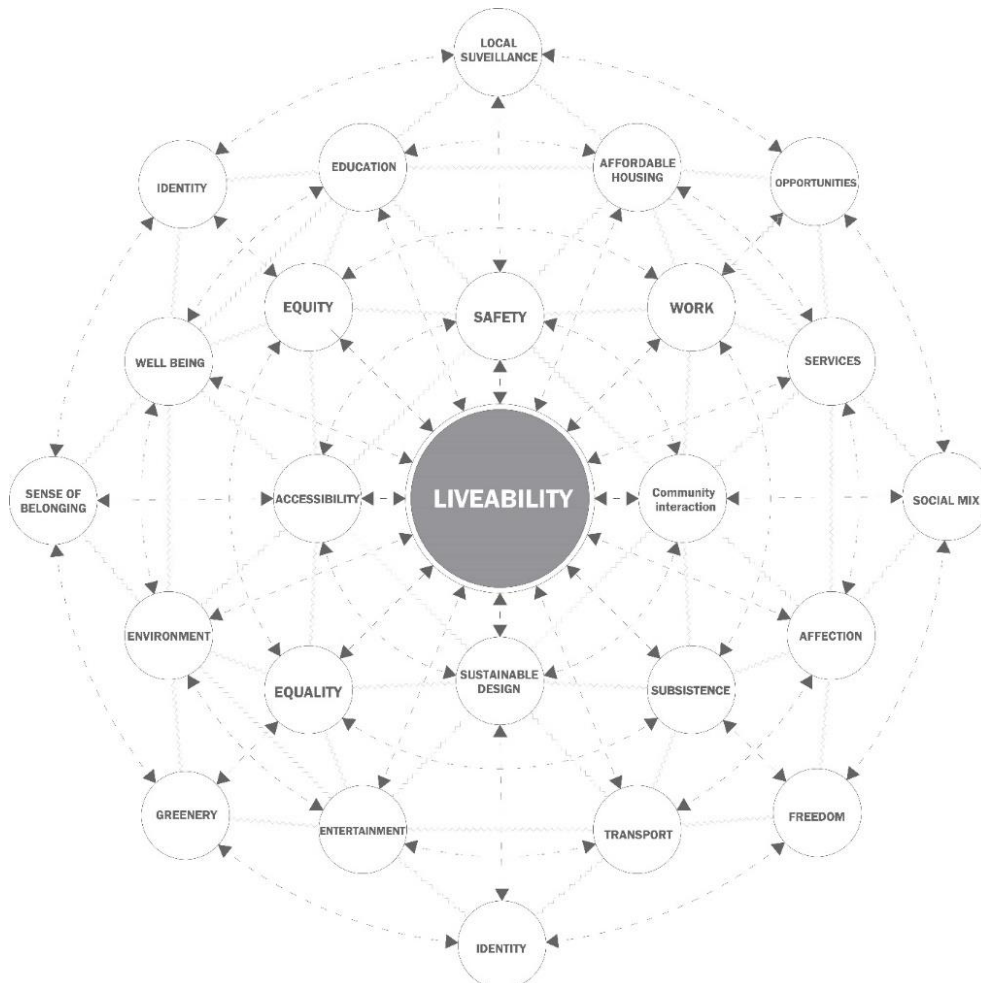


Figure 4: A number of liveability components and their interaction. Source: The author.

As explained in Figure 4, liveability consists of an unlimited number of factors that interacts with each other. In our case study, the most important factors are Accessibility, safety, community interaction and sustainability or green design. All of these factors interact with each other and the existence of each of them depend on the existing of the others in order to create an acceptable liveable urban environment. For example, when we achieve accessibility, we are fundamentally creating a safer urban environment. Subsequently, we are creating a better place for people to communicate and interact with their living area.

2.3.1. DESIGN FOR ACCESSIBILITY

“An automobile is a machine for mobility. A city is a machine for accessibility.” (Litman, Evaluating Accessibility for Transportation Planning 2008)

When we talk about accessibility, we mean how easy is it, or the ability to reach a specific location by walking or driving taking into consideration all people and their age groups of children and the elderly and also people with special needs. Accessibility itself is a wide concept that consists of a vast number of components that affects it and affected by each other. In urban planning, these factors are related to transportation and the methods of movements. Those factors can be summarized according to (Litman, Evaluating Accessibility for Transportation Planning 2008) as: transport demand, mobility, transport options (modes), user information, integration, affordability, mobility substitutes, land use factors, transport network connectivity, transport management, prioritization, and inaccessibility. Even though these factors are various, they are pretty close from each other. For the purpose of our study, we don't need to get deep in each one of them. Instead of that, we may identify two main patterns of accessibility which are: motor vehicle travel and walkability. See **Figure 5**.

There is disagreement among researchers about estimating the importance of each of these two patterns depending on economic, social and environmental factors. (Litman, Economic Value of Walkability 2003) argues that, determining the level of importance of each pattern varies depending on the perspective by which to see this issue. If we look at the topic in a conventional point of view, we find that motor vehicle travel is much more important than walkability depending on the fact that the distances traveled using this pattern of accessibility is fifty times more the distances traveled walking. While looking at this from another perspective, just thinking about losing our ability as humans to driving or walking, makes us value the walkability much more. The reason for this is that losing our ability to walk affects all the aspects of our life and may lead to an inability to engage in any kind of social or physical activities (Litman, Economic Value of Walkability 2003).



Figure 5: Accessibility Factors. Source: The author.

The concept of accessibility has been traded widely in new urban planning ideologies and movements. The existence of two conflicted ideologies can be noticed easily. Some movements stand decisively against the motor vehicle travel pattern and called people to minimize the usage of cars in their travel as minimum as possible. Others called for a complete boycott such as the “new urbanism” movement which adopted the walkability concept as its first principle and promoted the slogan “ planning for people not for cars”. On the other hand, new trends disagree with this ideology and criticize it as being unlogical. After all, in our modern way of living we need to cross long distances in order to get to our destinations, services, and goods. According to (Litman, *Measuring transportation: Traffic, Mobility, and Accessibility* 2003), nowadays, the conventional trend in transport planning overestimates the value of driving and underestimate the value of walking and this is how the transport is measured. The reason for the dominance of this trend is due to abstraction outlook followed in measuring and planning transport which is based on statistical data of the patterns of movement (motorized / nonmotorized) which undercount the nonmotorized pattern because they don’t take into consideration the small distances crossed by walking. In this regard, (Rietveld 2000) argues that, the real statistics for the travel

distances made by walking representing six times what is recorded in the statistics on this subject, due to a defect in the methods used in them. Look at **Error! Reference source not found.**, it illustrates a significant difference in the share of walkability just by taking an extra factor in the survey which is the travel time.

Table 1: Average Annual Travel by Mode in UK. Source: (DFT) national travel survey, UK department for transport. (www.transtat.dft.gov.uk), 2003.

Average Annual Travel By Mode						
	Travel		Travel Time		Trips	
	Miles	Percent	Hours	Percent	Trips	Percent
Walk	192	2.8%	64	18%	245	25%
Bicycle	34	0.5%	5	1.3%	14	1.5%
Motorcycle/Moped	36	0.5%	1	0.4%	3	0.3%
Car or Truck Driver	3466	51%	140	39%	401	41%
Car or Truck Passenger	2047	30%	82	23%	226	23%
Other private vehicles	162	2.4%	7	1.9%	8	0.8%
Public Transit	897	13%	62	17%	92	9.3%
Total	6833	100%	361	100%	990	100%

Understanding this dispute helps us to absorb its negative consequences on the urban environment and consequently on liveability, caused by the bias towards a motorized pattern of travel. (Litman, Economic Value of Walkability 2003) Summaries these consequences as follow:

- Shifts resources from walking facilities to roads and parking.
- Favours automobile-oriented land use patterns (wide roads, generous parking, low density, and single-use) over pedestrian-oriented development.
- Undervalues traffic management practices that support walking, such as traffic calming.
- Undervalues pedestrian safety investments.

I believe that this differential perception is wrong. We can not in any way separate between walkability and motorized travel patterns because they are both main components in any transportation system. In addition, the success of any transportation system depends on the successful interconnection between walkability and motorized travel, and the key is to create a balance between them. Anyhow, each case and each area impose certain conditions that must be observed in order to achieve the balance between these two patterns. The scale, size and characteristics of the region determine on what we should focus as urban planners. In this way, we can create an effective and coherent transport system that achieves accessibility, starting from micro areas to macro metropolitan areas. (Gratz 1995) Says: “Urbanists

focus on the micro before wrestling with the macro and understand that, in reality, the macro only changes for the better in micro steps . . . Innovation and ingenuity are the prevailing characteristics. Perseverance in the face of naysayers and determination in the face of obstacles are prerequisites. Step by step, essential and natural growth follows and spreads until larger areas prosper over time.”

After this general presentation of the idea, I am going to concentrate on the issues that are related to the case study, where obviously, the preference of the motorized travel mode and the walkability is almost neglected. The area is served by a good road system, but the problem lies behind the fact that these roads (though they do their goal and take us to the site) but it affected the area and isolated it from the city center which is very close. It is pretty easy to get to the study area but it is difficult to navigate inside it on foot. This led to many problems related to the sense of safety and made it an abandoned area in spite of its proximity to the city center. In the light of these observations, the focus in this section will be on improving the walkability and studying its impact on the liveability in the site, and how the existing auto-mobile roads are affecting the liveability of the area.

2.3.1.1. THE ROLE OF TRANSPORTATION IN CREATING LIVEABLE COMMUNITIES

Transport is a key factor in the daily life of everyone, and its influence extends to control our daily routine. It determines at which hour we should wake up to go to work and affect which road we will take. It even affects the person's willing to go to some place or choosing another one. This is reflected directly on the liveability of any place. No one would like to live or work or even visit a place that is hard to reach. Hence, the role of transport appears as a dominant factor in facilitating people's access to their desired places and subsequently, the accessibility in these places. We may say that *“transportation is at the core of everything.”* (Gratz 1995).

The importance of transportation in improving the community life made it one of the people's priorities in their communities due to its influence on every aspect of their lives and their interest in its impact on their urban environment, whether it is a positive or negative one. (Transit Cooperative Research program 1997) noted that *“People are beginning to realize that designing cities and suburbs to accommodate the automobile has often diminished, not improved, quality of life. Intrusive roads have created barriers that disrupt communities and erode their physical and social cohesion. At the same time, public transportation options are often viewed as inadequate alternatives. As a result, many communities end up with transportation networks that simply pass through them, without responding to community needs, relating to their surroundings, or reflecting local character.”*

In the light of these findings, we can say that transportation can only play a role in improving the liveability of the area only when his main goal shifts towards achieving the needs of the people not only

the needs of cars and traffic. Subsequently, it becomes an effective factor in shaping the community life. This could be done by increasing the attractiveness of the roads and including wide and comfortable sidewalks for people which are shaded by green trees. This transmits a sense of comfort and safety, and provides opportunities for people to meet and interact, which gives the people a sense of their right to the road and thus, contributes to enhance their interaction with the commercial and economic activities in the streets such as coffee shops and restaurants and public squares.

There are many strategies used in activating the role of transportation as a factor in increasing the liveability of an area. Each of these strategies has its own applications which could suit a specific area and don't suit another one. According to (Transit Cooperative Research program 1997), these strategies can be summarized as follows:

- Transit Strategies.
- Design-Oriented Strategies.
- Service-Oriented Strategies.
- “Traffic-Calming” Strategies.
- Transportation and Land-Use Strategies.

2.3.1.2. THE IMPACT OF ROADS ON THE LIVEABILITY IN HOUSING AREAS

By roads, I mean the different auto-mobile roads and their kinds and effects on residential areas and the residents. Generally, According to (Maloir, Tillema and Arts 2011), the residential area is affected by the type of the roads that pass near and lead to it. The houses that are located near the highways give their residents the advantage of accessibility and the use of the city's services more than the houses that are located in far areas. On the other hand, (Bateman, et al. 2001) argue that the disadvantages of these houses like noise, air pollution, and the heavy volume of traffic near it overwhelm the benefits they provide. This led directly to a decrease in the environmental value of these areas and subsequently, the level of liveability.

These effects on the living environment affect negatively the people's satisfaction about their urban community. In this regard, many studies had been done concerning the people's satisfaction regarding their urban environment. A vast number of objective and subjective indicators were studied. Nevertheless, the studies about the relation between accessibility and people's satisfaction were not much. According to (Maloir, Tillema and Arts 2011), the most important study regarding this Issue was the classical micro-economic location theory that studied the role of transportation and accessibility as a key factors in the people's choice of the location of their residential areas.

Overall, we can say that the majority of the studies that had been done regarding this subject concluded that the existence of a road with a heavy volume of traffic reflects a negative impact on the built environment, and adversely affect the people's satisfaction. This dissatisfaction affects the social, economic, and environmental factors and drives the people away from the area (Bateman, et al. 2001).

The decisive factor in determining the people's satisfaction about living near main roads is the distance between the road and the house (Maloir, Tillema and Arts 2011). According to (Eliasson, et al. 2002), the studies that had been done regarding the noise pollution and taking in consideration the accessibility concluded that the preferable distance between houses and main roads (highways) to be between 300 and 600 meters. This distance is enough to reduce the effect of noise pollution without affecting the accessibility between the house and the street. In addition, there are other ways to decrease this distance like tree fences and landscaping green topographic. See **Error! Reference source not found.** that illustrates the housing distance from highways.

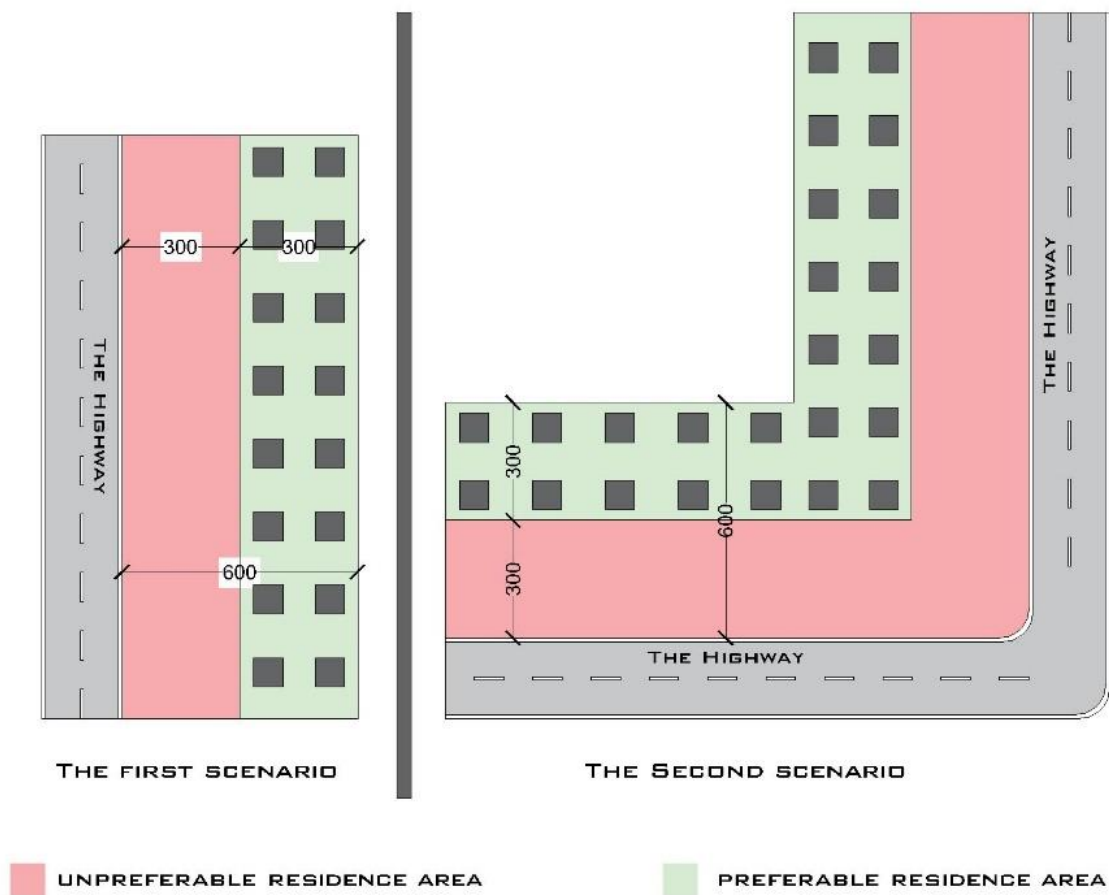


Figure 6: Preferable residence distances from main roads. Source: the author.

2.3.1.3. THE CONCEPT OF WALKABILITY

“Walking is the first thing an infant wants to do and the last thing an old person wants to give up.”

(John Butcher, Founder Walk21, 1999)

Each trip starts with a walking step. Walking is one of the simplest physical activities carried out by the humans. In spite of its simplicity, it has significant impacts on the physical, mental and social condition of the human being, and the socio-economic, environmental, and wellbeing in the urban environment. However, walking is not only about moving around and mobility, it is a tool to achieve relaxation and happiness, and an activity in which people interact with each other which enhances the community's coherence. Thus, according to (Pinho and Silva 2016) and (Emery and Crump 2003), walking is one of the key factors in building liveable urban communities by its ability to make the urban space more interactive, interesting, and enjoyable, and its role in activating the social relationships between the residents of the neighbourhood.

The term “Walkability” refers to the ability of conducting the walking activity within the urban environment. Here I don't mean the physical ability of the human to walk, but the ability of the urban environment to provide pedestrian paths which allow people from all age categories (children and elderlies) and physical conditions (people with special needs) to walk around the urban community easily and comfortably.

The early appearance of the walkability concept in urban literature is debatable. According to (Cambra 2012), the concept of walkability had probably emerged in urban planning literature in 1993 by Chris Bradshaw. However, it is known that walkability is the first principle of “New urbanism” movement which emerged in the early 1980s. Therefore we are not really sure who came up with the concept, but we know that it gained its popularity in the urban planning literature on the hands of “new Urbanism”. In fact, many researchers studied and tried to conceptualise the concept of walkability but it is evident that “new urbanism” members are the pioneers in this subject. According to (Speck 2013) who is a member of the new urbanism movement defines the walkable city as *“a city in which a car is an optional instrument of freedom rather than a prosthetic device.”* Here, it is evident that the concept of walkability has emerged as a reaction to the car's domination over the methods and the ways of urban planning and design to the extent that made its use inevitable in urban communities. Which in turn, affects the sizes of the urban communities and their social, economic, demographical, physical, and environmental qualities and characteristics.

According to a lecture by the architect Kent Larson, before the industrial revolution, the home was the center of life in urban communities which were relatively small. All services were easily reachable in a small walking distance. However, after the industrial revolution those services started to become larger

and controlled the centers of cities. This forced the people to move out and live on the borders of the cities. By time the city’s services became separated in far distances which creates the need for networks that connects them like railways and highways. As a result, urban planners starts to design models to accommodate these networks and people found themselves unable to reach the city’s goods by walking and were forced to depend on cars. This scenario continue till now and we are planning our cities based on models were invented more than 60 years ago for cars not for people. Therefore, the concept of walkability seeks to shift the urban planning methods from focusing on cars and starts to design for people again.

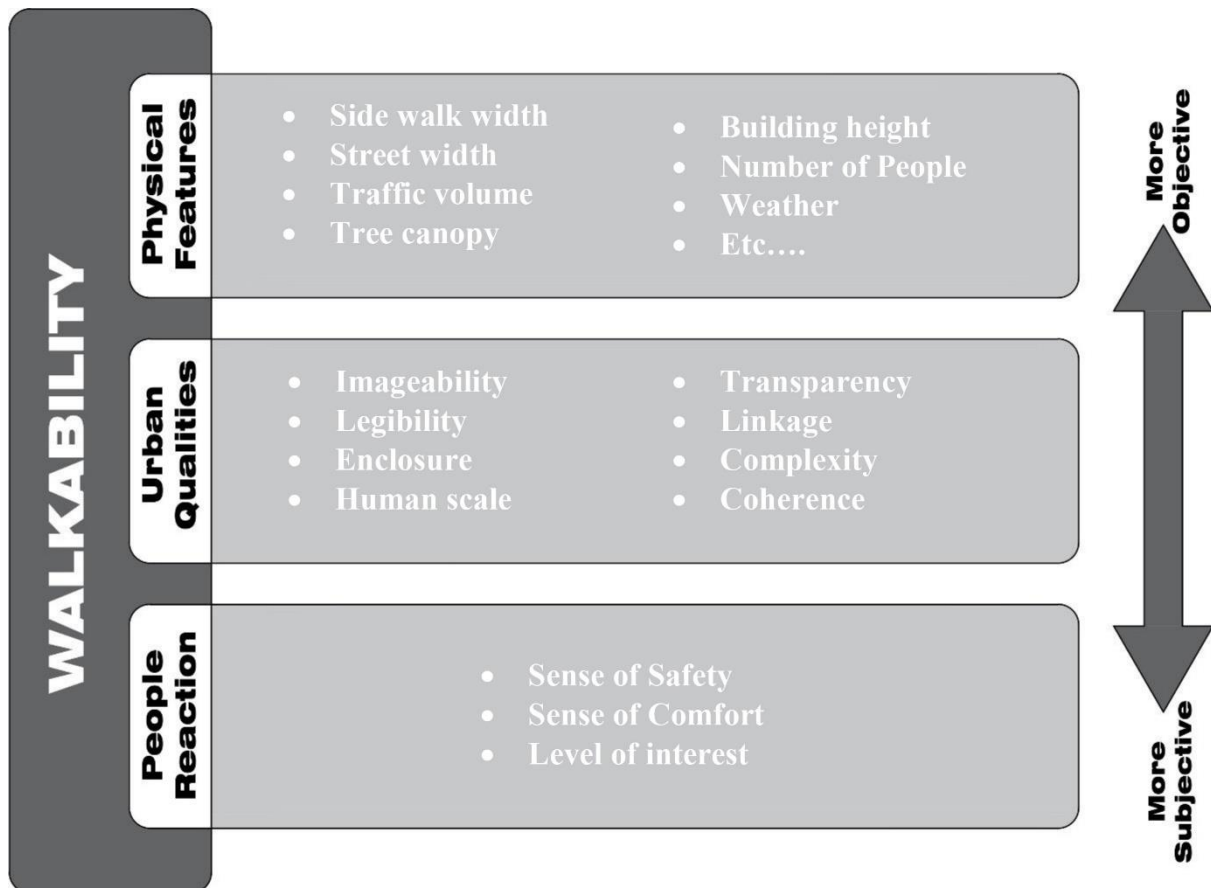


Figure 7: Walkable environment components and their classifications. Adopted from: (Cambra 2012)

The walking behaviour is a result of a large number of physical and social components or in another expression “objective and subjective” indicators that creates a walkable urban community. It is mainly about what does the urban environment have to offer us from its characters and physical components and the way they were designed, and how the people preserving and interacting with them. Illustrates a number of the main factors that produce and encourage a walking behaviour.

2.3.1.4. WALKABILITY ROLE IN ACHIEVING LIVEABILITY

As indicated earlier, Liveability is a wide concept that contains a numerous number of factors. As the goal of liveability is to achieve a good standard of living for the people, then all the main aspects of human life and activities are included in it. Accessibility, transportation, and walkability are basic human needs in their daily life and any defect in any of them is directly reflected on the level of liveability in the area. According to (Heylen 2006) and (Lennard 2012), one of the most important qualities of a liveable environment is its concern to provide a sustainable transportation system that achieves environmental, social and economic goals. Hence, walkability is considered to be one of the most important components in creating a liveable urban environment through promoting accessibility and the right to a place and enhancing the linkage between all the components of the urban community physically and socially.

Promoting walkability means providing a connected transportation networks with all of its components (public transportation, transit, driving, and pedestrian-friendly roads). In addition to its environmental, social, and economic effects by saving travel time and cost, pollution and reducing the natural resources consumption, and the sense of belonging and social coherence, and safety (Schmitz and Scully 2006). This makes it with no doubt a crucial factor in increasing the liveability of any urban community.

2.3.1.5. WHY DO WE NEED WALKABILITY

The debate about the necessity of promoting walkability is simply based on four main factors: environmental, health and wellbeing, social, and economical. Each of these factors is seen from two perspectives, the first is from the urban planner perspective and the second is from the people's perspective.

The health and wellbeing factor: walking is one of the most enjoyable and beneficial activities for human beings if they found a walkable environment. According to (Speck 2013), in 1970s, before the dependence on cars there the percentage of people who suffer from obese was 10% while it increased to 33% and another 33% are overweight. This affects the health of the people badly and make the vulnerable for a large number of diseases like diabetes. In fact, According to the American center of disease control predicted that 33% of the children who were born after 2000 will have this disease. (Speck 2013) argues that, this health crises is mainly an urban design issue created by the inactivity caused by the way that urban planners design cities nowadays. In addition, a large number of the respiratory system diseases are caused by the high levels of air pollution in the urban environments that don't support walkability and have a high volume of transportation. Also, far from diseases and moving to the levels of deaths cases caused by car accidents. According to the world health organization (WHO),

About 1.25 million people die each year as a result of road traffic crashes and half of those dying on the world’s roads are “vulnerable road users”: pedestrians, cyclists and motorcyclists. (Speck 2013) (Litman, Economic Value of Walkability 2003) argue that, this high number of deaths are more related to the way the urban environment was planned, whether it is built around people or around cars. In fact some of the strategies that (Litman, Economic Value of Walkability 2003) noted as tools to achieve walkability can reduce this deaths significantly. For example: traffic calming strategy where cars have limited speeds to go can decrease the probability of death in the case of the car collision with someone at the speed of 50 kilometers per hour from (80%) to a (95%) probability of living if the speed is 30 kilometers per hour.

The environmental factor: Air pollution and land consumption are the main arguments in the environmental factor of walkability and a main interest of sustainability concept. According to the union of concerned scientists, *“Passenger vehicles are a major pollution contributor, producing significant amounts of nitrogen oxides, carbon monoxide, and other pollution. In 2013, transportation contributed more than half of the carbon monoxide and nitrogen oxides, and almost a quarter of the hydrocarbons emitted into our air.”* According to (Speck 2013) (Litman, Economic Value of Walkability 2003), the solution to this problem is to stop the urban sprawling and make our cities more walkable and densely. Jeff Speck defended his argument by giving an example about Manhattan city which is one of the most dens cities in America. Manhattan city consumes gasoline as much as other cities were consuming back in 1920s and its electricity consuming rate is 50% less than other American cities. (Litman, Evaluating Transportation Land Use Impacts Considering the Impacts, Benefits and Costs of Different Land Use Development Patterns 2016) Illustrates the effect of this trend on the land consumption where a large area of land is dedicated to roads and their facilities like parking areas. Table 2 illustrates space required for each type of travel mode.

Table 2: Space Required By Travel Mode. Source: (Litman, 2016)

Mode	Average Speed	Moving Area	Parking Area
	Miles/Hr	Sq. Feet	Sq. Feet
Walking	3	12	N/A
Bicycling	10	60	32
Motorcycle	30	720	150
Bus Transit	20	50	N/A
Solo Driving – Urban Arterial	30	720	300
Solo Driving - Highway	60	2100	300

The social factor: Walking is considered to be the most social travel mode. It allows us as humans to interact and get together with others and the surrounding urban environments. According to (Leyden 2003) and (Lund 2002), urban communities that provide a pedestrian- friendly environments affects positively the social health of their residents and give them more opportunities to enhance their neighbourly relationships and enjoy their living environment. This interaction between the people and their neighbourhoods makes their urban community a more liveable one.

The economic factor: The economy is a basic concern in our life. Therefore, it has a significant importance in any urban debate, and of course, this is applied to walkability. According to Kent Larson and (Speck 2013), the trend of urban growth and sprawl which was motivated by the dependence on cars has made a deep change in city planning and the distribution of services in the urban communities. Everything became centralized and far from each other. The walkable urban environment allows people to reach the city services within a walkable distance and reduce the dependency on cars. As a result, land uses will be much more beneficial and people will not spend a large share of their income on transportation. According to the Canadian auto-mobile association, People spend about 9500 dollars on the car every year which is almost the third of their income. The Irony appears clearly when we compare this expenses with what the average Canadian spend on food every year which is around 4500 dollars. People are spending on their car twice as on their food. Promoting walkable environments can provide other affordable opportunities for transportation and gives the people the chance to spend their money on other things like education and health care. Nowadays people understood the impact of walkable environments on their health, economic and social status. According to a study done by Pembina institute, 81% of people prefer to live in less car-dependent neighbourhoods. Therefore, Walkable environments have higher economic, and environmental values.

2.3.1.5. HOW TO ACHIEVE WALKABILITY

Achieving walkability is not only about providing physical infrastructures. It is about making people willing to walk and provide their desirable services. This is not an easy task in our world especially with the existing of this tight relationship between people and their cars. According to (Speck 2013), *“if we want people to walk then we must give them a walk that is as good as driving a car or more”*. He argued that this can be achieved if we were able to provide four main issues that can encourage people to walk which are:

- **A reason to walk:** It is mainly about the way how we plan our cities. When we distribute the services far away from our homes or from each other, we don't offer the people the choice of a walk but they will be forced to drive. On the contrary, if we adopted a compact design where

the most of the needed services are located within a walkable distance then people will not be in need to use their cars to move. This is also related to the physical design of the walking paths. They should be safe, comfortable and enjoyable.

- **A safe walk:** any place that is not safe people tend to abandon it and not even go close to it. Providing a safe walk way is essential to attract people to walk. The sense of safety should be provided through physical design and also the variety of services during the day and the night. We should focus on creating open spaces, illuminate our roads sufficiently, and give the priority to people not cars on our roads by providing a sufficient number of traffic signs and crossroads, and adopting traffic calming strategies.
- **A comfortable walk:** It is related to the height of the buildings, the greenery and trees, and the existence of rest facilities like benches and public spaces. (Litman, Economic Value of Walkability 2003) noted that, people like to see where they are going and don't feel that they are dominated by the buildings nearby.
- **An Interesting walk:** the variety of activities and services along the walking road evoke people to interact with the surrounding and increase the excitement of their walking trips which in turn encourage them to walk more and depend less on driving the car.

Regarding the physical design of walking road's infrastructure, Chris Bradshaw noted that promoting "Walkability" through physical design has four basic characteristics:

- A "foot-friendly" man-made, physical micro-environment which is characterized by wide, level sidewalks, small intersections, narrow streets, lot of litter containers, good lighting, and an absence of obstructions.
- A full range of useful, active destinations within walking distance: shops, services, employment, professional offices, recreation, libraries, etc.
- A natural environment that moderates the extremes of weather- wind, rain, sunlight while providing the refreshment of the absence of man's overuse. It has no problems of nuisances such as excessive noise, air pollution, or the dirt, stains, and grime of motor traffic.
- A local culture that is social and diverse. This increases contact between people and the conditions for social and economic commerce. (adopted from a report named "*Site Analysis: Urban Senior Housing*", University of Cincinnati)

To sum up we can say that "Walkability takes into account the quality of pedestrian facilities, roadway conditions, land use patterns, community support, security, and comfort for walking." (Litman, Economic Value of Walkability 2003).

2.3.2. DESIGN FOR SAFETY

The person's choice to live in a neighbourhood is affected by several factors, one of the most important factors is the person's feeling of safety in this neighbourhood. The natural reaction to the sense of being threatened or unsafe is to run away. This is also applied in the context of the urban environment. Most researchers agree that the urban environment that doesn't deliver the sense of safety to its residents or users will be abandoned and not suitable for living at all. Therefore, we can say that there is no liveable urban community when there is no sense of safety.

The humanitarian community has known crime since the start of its composition, and since then knew the good and evil, virtue and vice, normal and deviant behaviour, and the unparalleled views and forms of the crimes swept in all societies (Abdin 2010). Plato, Aristotle and beyond AL-Farabi, all dreamed of virtuous cities where sin and evil are negated, but this remained as a dream in their imaginations because this is over the human powers and not possible to be achieved. However, we can reduce the crime and violence rates.

Safety problems are increasing in urban areas, because of the breadth of the urban extension and increasing population density, as well as the expansion of its economic activity which is usually accompanied by weakness in traditional social relations, and sharp class disparity (Kammounah 1997). We as urban planners have a big role in promoting safety through our designs. The planning and designing of residential environments and the formation method we use plays an important and very effective role in strengthening the social relationships between the people and their sense of Safety, besides adding an effective participation to increase the safety and reduce the opportunities that ease the crime (Haj Hasan 2007).

Most of the recent studies on the subject of urban safety focus on the direct threats on people like robbery and assault crimes. According to (Carmona, et al. 2003), there are other dangers that threaten the safety of people like air pollution and other natural threats like earthquakes and floods. Most commonly, these problems are being held with a larger scale of urban planning than our case study. Therefore, our focus will be on the most related issues that threaten the safety of people in our case study like crime, car traffic, and air pollution.

However, crime is not the only factor that affects our sense of safety and drives us away from the urban spaces. There is what is known as "The barbarism of street" like writing on the wall and the existence of vandalized public properties or the gathering point for some kind of people who make other people concerned like drunk or drug people (Liska and Messner 1999).

The relationship between the urban design and the feeling of security is tight. A vast number of studies regarding this concept has been held, where the idea of creating places for people has been dominating on the contemporary urban design methodologies. We look to the urban emptiness as perimeter to show human behaviour "Behavioural setting" and thus the urban design process does not focus only on the concept of beauty, but also on diversification in urban spaces, and on activities that will help in the creation of successful and safe public spaces, and in particular, focuses on how to support the physical environment of the functions and activities that is happening inside (Haj Hasan 2007). Therefore, people's relationship with the space is very important to control their behaviour, and it is a relationship stating that people's interaction with the environment is a two-way process, where people affect the environment and change it, as it affects and changes them. "*Streets, sidewalks, parks, and other public spaces, if designed well, they are capable to show of the best in human nature output*" (William H. Whyte, Jane Jacobs).

2.3.2.1. URBAN SAFETY IN PORTUGAL

(This section is mainly based on a study by Simone Tulumello at the Institute of Social Sciences, University of Lisbon, Portugal)

According to (Tulumello 2014), International and European surveys show that Portugal has one of the lowest rates of crime and violence in Europe during the last twenty years. Most of these crimes are often incidents of theft or robbery. Between 1990 and 2004, it is noted that the number of reported crimes was increasing gradually and slightly (Ferreira 2003). The ratios remained relatively stable until 2008, where the number of crimes in the summer of this year has increased. This increase was followed by an inflated media campaign about the security thread in Portugal.

A year earlier in 2007, the first annual security strategy was approved. (Tulumello 2014) Summarized this strategy as being "*made of centralization, repression, and situational prevention. The law provides for: strengthening and centralization of state police bodies – Policia de Segurança Pública (PSP), mainly responsible for urban areas, and Guarda Nacional Republicana (GNR), mainly responsible for rural areas; patrolling in "critical" neighbourhoods; video-surveillance.*"

However, the media campaign in 2008 urged a number of interventions regarding the security issue were approved such as: the Internal Security law, a national video-surveillance programme, and the protocol for local security. This was followed by a survey in Portugal measuring the citizen's sense of security (Tulumello 2014).

What is noted is that, in spite of Portugal has one of the lowest rates of crimes, many Portuguese citizens have a feeling of insecurity. According to (Dijk, Kesteren and Smit 2007) this is due to the lack of faith

in the future and the visibility of some minor criminal activities in urban spaces –which don’t have a direct threat- like drug dealing and vandalism.

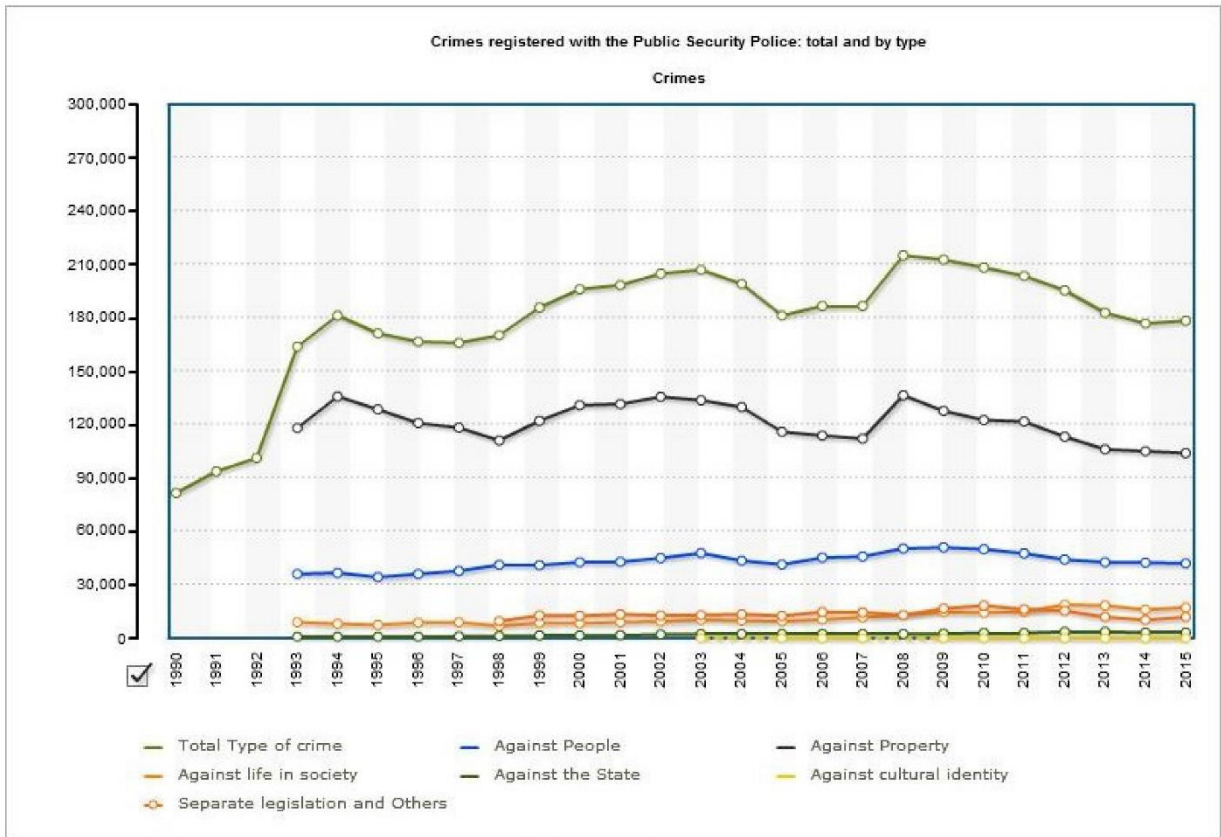


Figure 8: Crimes registered with the Public Security Police: total and by type. Source: DGPJ/MJ, PORDATA

2.3.2.2. CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

The safety issue has booked a special role in the recent urban planning literature. There are a tremendous amount of studies, which is embroiled in this regard. However, the concept of safety is like the concept of liveability, they both dates back to the ancient times. According to (Cozens and Love 2015) and (Schneider and Kitchen 2002), the idea of design for safety can be traced back to the early humanitarian history. It is recorded in the design of ancient castles and forts, where humans tamed the design and landscaping elements to provide protection and defend against external threats, as well as the use of slanted walls, moats, and drawbridges to control access.

However, (Saraiva and Pinho 2011) and (Cozens and Love 2015) argued that the concept of urban safety in the recent urban literature was brought in the 1960s on the hands of the famous urban planner Jane Jacobs where she touched on this subject in her book (The Death and Life of Great American Cities). However, the concept didn’t shape till 1976 with the work of the famous architect and planner Oscar Newman in his book “Defensible Space: Crime Prevention through Urban Design” after a deep

study of crime rates and its relation to specific physical features in the urban design. C. Ray Jeffery who puts the biases of the most famous theory on urban safety which is (CPTED) “Crime Prevention through Environmental Design” in 1971, had acknowledged that the work of Oscar Newman should be the base of (CPTED) because it was much simpler than his work and ready to be applied (Andresen, Brantingham and Kinney 2010). (CPTED) was mainly focusing on the physical elements of the urban environment till the 1980s when the first real application was done, a number of social factors were added gradually during the years. Nowadays, we have a scary number of studies on this issue, but till now, most researchers agree that (CPTED) is the most famous and reliable one.



Figure 9: Timeline of the evolving of urban Safety concept. Source: the author. Adopted from (Saraiva and Pinho 2011)

2.3.2.3. HOW TO ACHIEVE SAFETY

Most researchers believe that the urban environment has a major role in determining the behaviour of People. Some environments encourage violence and crime while others reduce it and prevent it. The “CPTED” and “Defensible Space” concepts focus on the physical details of the urban environment and the buildings. However, there are some researchers who argue that beside the importance of the elements in the urban environment, there is a strong relationship between the methods we use to plan our cities and the crime rates. (WELLE, et al. 2015) and (Brownell, Redeveloping Modern Housing Sites. Improving the Livability of the Ground Plane 2007) argues that the modern trend in urban planning which depend on the urban sprawl, centralization of the services, and separating the services areas from each other and from housing areas led to a major negative impact on the crime rates and the liveability of these urban communities. (Brownell, Redeveloping Modern Housing Sites. Improving the Livability of the Ground Plane 2007) Continues and gives an example about in many social housing projects in America which followed Le Corbusier’s precepts had fell a victim to Crime and neglect. Therefore, a call for adopting a compact city planning appeared and started to grow. The supporters of this trend are

calling for cities and neighbourhoods where all the goods and the activities in the city are more connected and interactive which affects positively the sense of Safety. For example, in regards to the car crashes and the deaths caused by it. It is noted that it is lower in the compact cities than in other sprawling cities. (WELLE, et al. 2015) argue that in Stockholm, Berlin, and Tokyo which are examples of the compact city design the rate of deaths caused by car crashes is 9 times lower than cities like Atlanta which are planned on urban sprawl principles.

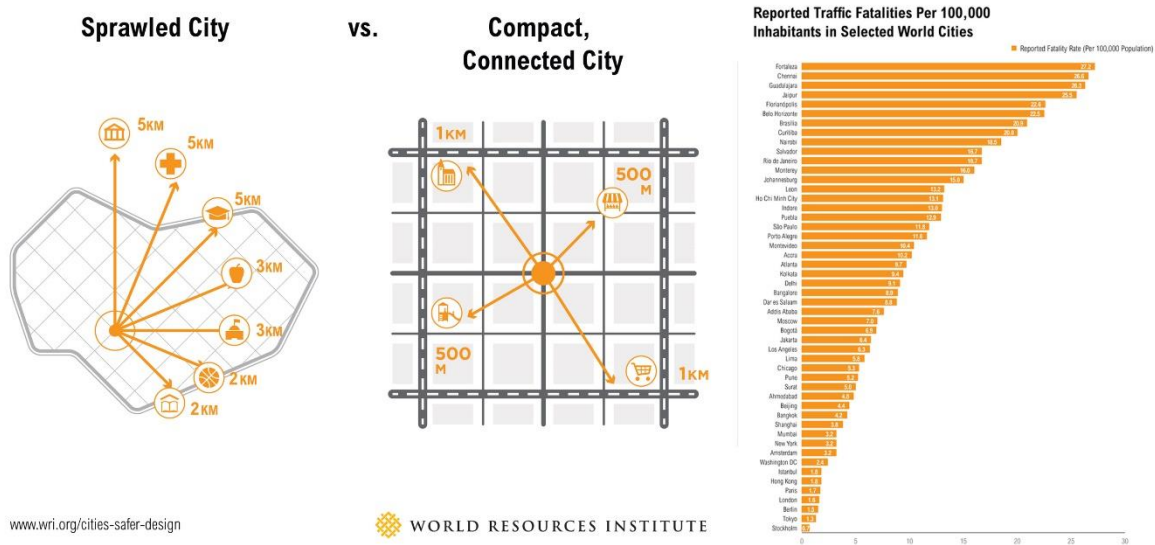


Figure 10: Sprawled city and Compact city planning. Source: (WELLE, et al. 2015). Edited.

However, in the case of our study area and its size, we will focus on the physical elements and the characteristics of the area, with paying attention to some features of compact planning ideas.

There is a point we must focus on, which is that all the actions undertaken to combat crime through urban environment design aim to reduce and minimize the crime rates, but it is not able to prevent it completely. Crime always will be present and there is no urban environment completely free of crime, except in the utopian city of Plato's.

In order to create an urban environment that is able to reduce the crime rates, we as urban planners must do a detailed analysis of the circumstances related to the crime to identify local patterns and environmental conditions that may result in the creation of opportunities for the occurrence of crime in order to avoid them in our designs.

According to (WELLE, et al. 2015) and (Carmona, et al. 2003), there are several parameters that we should pay attention to while we are designing any urban project in order to make it safer which are:

- **Lighting:** In order to recognize faces within 15 meters, we must illuminate the public spaces with a minimum illumination intensity of (4 cd / ft). These standards include the alleys, narrow lanes, and staircases, as well as entry and exit paths and banners in the urban environment. Also, must make sure of the consistency of lighting, and the proper positioning of the lighting elements, ongoing maintenance, and a good planning for night-time use.
- **Site Coordination:** choosing the elements of urban furniture and positioning them in order to serve as dividers and barriers for observation.
- **Provide special equipment:** such as emergency phones, intercoms, cameras and surveillance equipment.
- **Achieve visibility by others:** so that the user can not be isolated and this is achieved through mixed and intensify uses in the same region, in addition to the intelligent use of activities generators which include everything from increasing recreational activities within the park, and the selection of residential sites within the previous trading regions, to adding a sidewalk café to the office building.

In regard to the surrounding environment, the proposed a number of action that could increase the feeling of safety and prevent the crimes from happening, such as:

- **Design for intimacy street and neighborhoods,** where the inhabitanicies can feel more close to each other resulting in the increase of the feeling of safety, where the studies show that the narrow street in residential area can increase the sense of safety in its residence, like the example of the old city centres in many traditional cities reflected in the feeling of intimate and reduce the feeling of loneliness for the people living in the area and for pedestrians as well.
- **Differentiate the areas between public and private by design,** and clarify that differences so the users of any of those areas can't be mixed, in that way it reduces the possibility of losing control over the private areas.
- **Increase the movement of the pedestrians inside the urban area,** whereas the present of the constant movement would increase the feeling of safety, the availability of having pedestrian's paths encourage the people to spend times outside and interact with another walking in the same areas without the fear of any auto vehicles accidents.
- **Increase in the intimacy of the project by designing medium high masses,** where many studies showed that the smaller the masses of the buildings the higher the safety in the area, big masses buildings cause the feeling of isolation in the individual and create bigger surrounding spaces that lose the quality of intimacy.

- Securing physical boundaries between the private and public spaces.
- Designing pedestrian and car roads in a way that increases natural surveillance.
- Securing manual and Electronic control of internal and external access points.
- Fragmentation of critical areas in order to achieve a better degree of control.
- Restrict access to storage areas.
- Limit the number of exits and entrances within a single facility, depending on the necessities of operating and emergency laws.
- Clarify the signs that determine the entrances to the site.

2.3.3. DESIGN FOR SUSTAINABILITY

When the world commission on environment and development 1987 defined the sustainable development as a development meets the needs of the present without compromising the ability of future generations to meet their own needs. (Butlin 1987).

The three main aspects of this concept are recognized by three essential aspects for sustainable: Environment, economic and social. Sustainable is one of the most important considerations for architects and urban planners, which effect all urban planning levels from one building to entire urban areas. Since the proliferation of the sustainable concept there are no separation lines between the environment and the economics, that's because the urban activities and buildings have clear impact on the environment, so the sustainability is a way to organize the human activities so the community will be able to fulfil their needs at the same time protect the natural living system and preserve it for the future generation.

Sustainability today adopted the use of renewable sources to face the increasing dangers of building's negative impacts on the earth environments, in additions to the economic challenges caused by the uprising of the energy and materials costs.

Sustainable urban design

Which is an urban planning designed and implemented with the considerations of the sustainable aspects, this urban design does not only reduce the use of energy and environmental impact, but also reduces the maintenance costs and create better work conditions. Because of that the sustainable urban design is an important part of the sustainable development system which is the search and execution of radical solutions enable the successful society to act with the natural system by keeping specific system allows the renewal of the sources.

It's a complete process ensure the secure sustainable system for the society including the natural environment, economic balance and liveable social context, to succeed that a cooperation between all efforts in all specialities to form full sustainability. (Morai and Taha 2005).

Liveability:

The definition of liveability as the subject of sustainability affecting the people in the community as economic, affordability public health, social equity, and pollution exposure. (Litman , Sustainability and Livability, Summary of Definitions, Goals, Objectives and Performance Indicators 2011).

While the 2003 definition of the liveability from the English parliament was (McNulty 2003):

«About building stronger local communities and enhancing the quality of life through action to improve the quality of local environments and the places where people live».

To understand the liveability of any building we must understand how is it work on the aspect of first sustainability, where the fulfilment of the sustainability terms ensures that through the implementing of any design sustainability three aspects were considered, second safety where as much the design of the building reflect the safety measures it would increase the liveability sense for the urban area.

Last but not least, community, the sense of the correlation confirming a community provided by the use of public spaces and facilities to increase the interaction between the inhabitancies of the urban area. (Brownell, Redeveloping Modern Housing Sites, Improving the Livability of the Ground Plane 2007).

When a designed is considered liveable, it should meet certain criteria, including the three main aspects, also a series of examination of the implementing phases of the design will have to be done in order to develop this understanding of the liveability factor.

Also not forgetting to mention that depending on the society of the design the aspect of liveability might change from one social and physical community to another, and that's why the early defined aspects are related to special cases, and it could be altered depending on the situation.

Although the measures of the liveability in any design is exposed to changes, but the criteria available can guide the specification of the design, and based on this few steps or subjects that could be discussed before a design is made or before the determination if its liveable design, an improvements of the liveability in a design or urban area can be designed and made, also it would help in setting the rules of liveability in the same area for future designs.

2.3.2.3. HOW TO ACHIEVE SUSTAINABLE DESIGN:

Based on what have been mentioned earlier, achieving liveability is possible through the achieving of sustainability, it's the aspect of liveability related to the physical design and implementing of the urban area, in order to achieve that, the design must consider the elements of sustainability which are, environment, economic and social. Any attempt to study urbanity must start from those elements, the balanced reaction between those elements in the urban buildings and facilities form the sustainability in urban areas.

Sustainability:

Urban areas are attraction points for energy consumption, pollution production and a big source of waist, buildings consume 40 % of energies, 20% of water and 35% of inhabited areas waist, and the sustainable designs provide fewer effects on the environment.

To ensure sustainable design, many considerations should be taken, in this study, some of those consideration would be listed:

Consideration on the urban areas level:

1. Urban designs compatible with climatic changes, for example in hot climatic areas the design should reduce the heat gain by carefully orienting the building depending on the air movement to ensure the best air stream between.
2. Urban designs efficient for energy sources, for example the use of solar energy in the buildings by producing the energy using the solar panels, also designing the facilities of the urban areas to use the heat and light provided by the unlimited source of solar power.
3. Using renewal energy sources, including the wind and water generated energy, in addition to the solar energy.
4. The efficient use of urban areas in the design, and ensure the global standards indicating the spaces between services facilities and residential building, in addition to the full use of the public spaces.
5. Convenient designs for public spaces of the urban area to encourage the social activities of the inhabitancies of the area in order to enforce the relations inside the social community and by that increase the social aspect of the liveability of the area.

Consideration on the buildings level:

1. Using materials environment friendly, not only using materials that have low impact on the environment and don't cause high level of CO2 emission in the production procedures, but also choosing materials available in the environments or materials that have the least amount of CO2 emission caused by the transportation of the materials from production areas to the project areas and back from the project area to the land field.
2. The implementing or water treatment systems including the grey water treatment methods and rainwater collecting system, not only using those systems inside the buildings, but also extend the use of this systems to the project's facilities and public spaces in order to ensure the best use of the water sources in the project and in result preserve natural sources.
3. Implementing waste treatment system in order to use the best possibility of the benefits provided in the area by treating the waste produced in the project resulting in components environment-friendly, not to mention the use of organic waste in agriculture areas.
4. Ensure good indoor air quality inside the buildings by using thermal and sound insulation systems inside buildings to increase the benefits of using heating and cooling systems, also increase natural and lighting and ventilation to reduce the costs of the using alternative artificial systems, in addition to that using environmental system to ensure better use of natural source, for example greenhouse effect, where the heat from the sun could be trapped indoor by using glass opening on the elevation facing the direct sun, and provide opening on the other directions to create heat stream can be directed to into special areas.

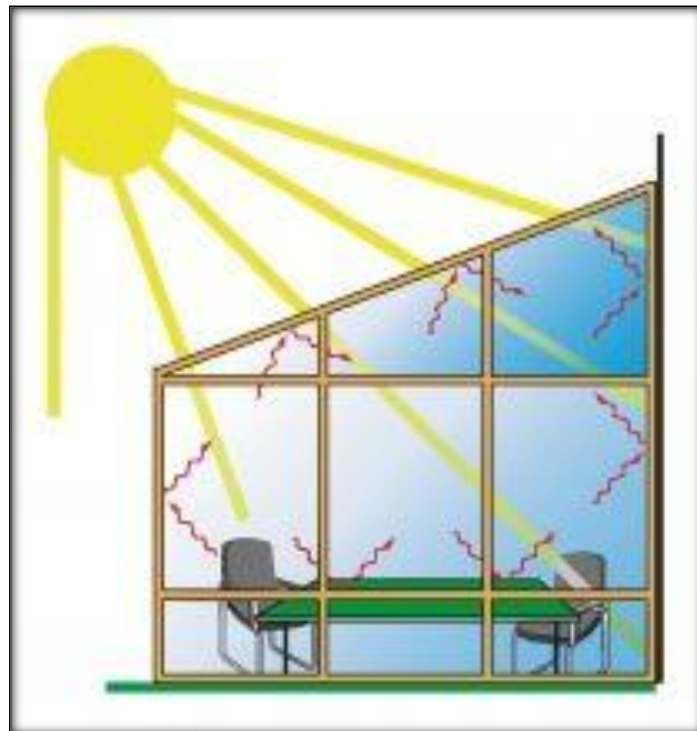


Figure 11: Environmental design concept. Source: (Ltd, 2016)

5. The use of green roof systems, which provide isolation for the thermal changes inside the buildings, also reduce the emission of the CO₂ and could reduce the heat gain into the buildings materials.
6. Consider the use of the appropriate masses designed to ensure the best use of the land and the three-dimensional space dedicated to the project by using the architectural design that provides the least amount to the heat gain, for example, design the masses in the form of stripes to reduce the amount of elevation's exposure to climatic changes. Also designing closed shape to reduce the thermal lost in the outer envelope of the buildings.

2.3.4. DESIGN FOR COMMUNITY:

“Humans are social creatures in their nature”

(Ibn Khaldoun/ Philosopher)

As human beings, we are in need to interact with our surroundings on the social and physical levels. This means that we need to communicate and interact with the people around us and the need an appropriate place for this communication. As urban planners, we plan cities for people and this goal is the most important one in the planning process. Therefore, the social factor is included in any urban planning strategy or new urban planning movement in order to be successful.

From our previous study of the Accessibility, safety, and sustainability, we can clearly find that building better communities is the main focus in all these aspects. Therefore, many if not most of the strategies to achieve these goals included the idea of design for community. However, there are main aspects should be provided in any urban environment that is mainly focused on designing for community. (Brownell, 2007) and (Ludvigsen 2006) provided a number of main designing strategies in order to achieve the community interaction. These strategies are mainly based on the ideas of Mixed use buildings, respecting the human scale, providing visual limits in the urban environment, and adopting compact planning.

To sum up, the relations created between the residents of the same neighbourhoods increase the levels of liveability, and cause strong atmosphere in the urban areas, and this relation and the forming of the community could be achieved through many consideration, including:

1. Designing public spaces and facilities that could be used for social gatherings like in the ground floor for residential areas, public squares, and arenas. These public spaces enable the residence to

organize special occasion to get to know and meet each other, which enforce their relations and strong connections.

2. Create various uses for buildings block in order to mix the interaction that people could have in their everyday life, and open the possibility of fulfilling the different needs of the inhabitants.
3. Mix the services in the commercial area of the projects to lead to relations between a different user of those services, on the same time ensure the availability of any needed services in the same area range considering the standard for the spaces between those services.
4. Enable the net of transportation from an urban area and to it, in order to ease the movement of people to increase the level of liveability of the area, whereas to provide better services for residents and the users of the area.
5. Designing on the adoptable scale of the community, to provide familiarity for the user of the project with the scales of the design. That can relate to the adopting of the facilities by the user and increase the attachment towards the design and towards the object of the design. Many studies showed a higher level of comfortability within the designs based on human scale considering the unit that is the foundation stone of the design and the urban area in general. (Brownell, 2007).

2.4. CONCLUSION

Liveability is a complicated concept and the number of contributed concepts and economic, social, physical, environmental and cultural factors in achieving liveability is numerous. Seeking liveability as it appears in most research is like a try to catch the perfection but in an urban planning point of view. Both objective and subjective points of view were discussed deeply.

Even though this research is more directed towards physical design, the social factors took an important part of the study. Anyway, creating an urban environment that is considered liveable for everybody is not possible. People are different and their opinions are different, an urban environment that is considered liveable for some people might be not for others. In order to overcome this dilemma, I chose a number of main factors that represent common problems for the vast majority of the users of our case study and a big number of other urban environments. These factors are: Accessibility, Safety, Sustainability, and community interaction.

I made a separate analysis of each of these factors and discussed the general urban debates regarding each of them, studied their relations to the concept of liveability, and how to promote them in urban environments in order to make them more liveable. I reached out a number of findings to be considered and implemented in the urban proposal which is the main aim of this work. The findings represent qualities of the concept of liveability which are able to evaluate the level of liveability of our urban project.

The findings of this chapter are :

Regarding Accessibility:

- Alleviate the traffic pressure or convert it in order to not contradict or adversely affect the walkability or the environment's atmosphere.
- Promoting walkability
- Activating safe, interesting and comfortable pedestrian paths.
- Connecting the area with its surroundings and adopting the compact planning policy.

Regarding Safety:

- Adopting Crime Prevention Through Environmental Design (CPTED) strategies.
- Local Surveillance.
- Controlled access without creating closed environments or gated communities.

- Enhancing the built environment to promote a sense of safety by improving or adding physical elements that are considered essential for safety like lighting, signs, emergency phones ... etc.
- Encouraging people to use the spaces by providing a variety of activities.

Regarding Sustainability:

- Green design strategies
- Best use of sunlight and absorbing water.
- Preservation of nature.
- Compact development.

Regarding Community:

- Mixed used buildings.
- Street life.
- Human scale.
- Transportation.

3

UNDERSTANDING HOUSING TYPOLOGIES

3.1. PREFACE

The purpose of this chapter is to discuss housing typologies and concepts in terms of quality and liveability through the theoretical discourse, such as the particular analysis of the proposed site. Consequently, the chapter will consist of two basic parts: theoretical aspect of the work, which will include deep explanation and an illustrative approach to generally recognized housing typologies; additionally, theoretical findings serve as an introduction to the sequence of the work where the practical part of the work will be highlighted in terms of examining the site of the case study and proposing recommendations for an applicable urban solution for the location.

As a final point, anticipated outcome would be increased liveability of the area, crucial for prevailing, such as the future development of the real-estate market and quality of living in the area. Forming proper strategies which will take into account immanent aspects of urban planning and urban design – such as accessibility, safety, and community interaction in general, will also be examined and implemented through this work.

Understanding of housing typologies plays a vital role in proposing urban design which will meet the needs of the citizens and create friendly, ecological and safe places, emphasizing the importance of community and interaction among users of the space. Urban sprawl is directly linked to forming housing typologies, and the quality of living in each of the typologies is part of a “cause and effect” process, which eventually shows the value of certain urban planning processes, regarding both, large scale and small scale projects.

3.2. THEORIES OF URBAN PLANNING

The literature on the subject of urban planning shows a variety of approaches when it comes to liveability and housing typologies. Different theories have been widely researched. This section will include a brief overview regarding these strategies and how they are used for creating cities, neighbourhoods and environment in general.

(Araabi 2016) in his work under the title “A typology of urban design theories and its application to the shared body of knowledge.”, suggests these generally recognized approaches in urban design:

- Theories of composition and mass space where the objective is on dimensioning, forming grids, such as the emphasizing of the social impact of the city grids and the shapes. This approach is found in books/theories such as in the “City Planning According to Artistic Principles” by Camillo site, “Collage City” by Colin Rowe and Fred Koetter, “Space Syntax” by Bill Hillier and Julienne Hanson, and “Finding lost space” by Roger Trancik.
- Theories of the visual aspect of public spaces, highlighting the importance of 3D design and its use in the creative process, such as the “theories about building façade and composition of new buildings within the context” (Araabi 2016), found in theories such as “Townscape” by Gordon Cullen.
- Theories of the image of the city, putting the perception of the environment, such as “The Image of the City” by Kevin A. Lynch.
- Theories of safety regards the planning which stresses out the importance of safety requirements such as lightning, mixed-up use development, and security, as a consequence of social problems of the modern city. The theories can be found in the work of Jane Jacobs “The Death and Life of Great American Cities”.
- Theories to evoke social interaction, where the significance of public spaces and contact among members of society is taken as a priority. It can be found in works such as “Social Life of Small Urban Spaces” by William Whyte and “Life between Buildings” by Jan Gehl.
- Theories to improve identity of the space, historical aspect and authenticity of the place, such as the meaning of the cities through the culture, tradition, and context. The theories can be found in work such as “Urban Space” by Rob Krier, “Collage City” by Colin Rowe and Fred Koetter, and “The City Shaped” by Spiro Kostof.

All the theories mentioned illustrate various ways in creating an urban environment which meets all the requirements in terms of liveability. However, speaking of liveability, concerning our case study particularly, the aspects of safety, community interactions and sustainable design must be included while creating a proper strategy.

3.2.1. TRADITIONAL VS MODERNIST PLANS

Traditional city plan and modernist city plan are broadly accepted to reflect the concept, way of thinking and creation of cities, which is put down to dissimilarities in their appearance. However, the appearance is not the only effect on the citizens and humans in general, but the liveability, which is one of the primary objectives of this work. Therefore, understanding of distinct beliefs regarding human needs and developments of the city is crucial in determining the positive and negative aspects while generating a strategy for designing liveable places.

Starting with traditional city form, which is recognized by grid – and grid towns, appearing by mainly spontaneous consequences regarding development and regarding use and certain spatial solutions. This city form provides a mixed-up use development, disposing to retail, institutional or residential use, nevertheless without forcing any definite use.

The originality of traditional city form lies in the fact that due to mostly spontaneous development the dimensioning of city blocks are adequate in the matter of human scale. Various research has demonstrated that small block size evoked a feeling of identity and creates spaces which are more suitable for “street life”.

In the traditional city, the human scale can be seen as creating the right dimension and avoiding over dimensioning which can create not only not-pleasant, but also unsafe places. Additionally, the perception of smaller spaces and using visualization techniques as methods that our mind use to make sense of our environment are also mechanisms that can be utilized as design mechanisms.

(Lynch and Rodwin 1958) in their article “A Theory of Urban Form”, emphasized the importance of the people’s perception of their environment and our role as urban planners in that.

“A planner in this sense is aware that the final motive of his work is its human effect, and he should be well grounded, for example, in the interrelation between density and the development of children in our society. He must be quite clear that the physical or locational effects may often be the least important ones, or operate only in conjunction with other circumstances. Above all, he has to understand that the very process of achieving his proposed form, the way in which the group decides and organizes itself to carry it out, may turn out to be the most decisive effect of all. Nevertheless, he takes the spatial environment as the focus of his work, and does not pretend to be a sociologist, an economist, an administrator, or some megalomaniacal supercombination of these. Physical form and the spatial distribution of activities in the city are partly contained in the traditional “land use” categories of the planning field. Unfortunately, these categories are analytically treacherous.”

(Lynch and Rodwin 1958)

The previous sections have shown values that are promoted by the urbanism which encourages traditional form as a way of creating liveable spaces. On the contrary, modernism suggests a humanistic approach where principles of urban planning differ from the first one, although the end result should be the formation of pleasurable and liveable spaces in both cases.

For instance, Le Corbusier saw *human scale* as a methodology deeply connected with his modular system and by providing equal nature to every citizen. Accordingly, speaking of the term *nature*, he was referring to light, greenery, yards and liveable spaces by opening the ground plane to air.

“These results open new prospects for architecture; they present themselves to an urbanism which can find the means wherein to arrive at the solution of the great sickness of our present-day cities. The house on columns! The house used to be sunk in the ground: dark and often humid rooms. Reinforced concrete offers us the columns. The house is in the air, above the ground. The garden passes under the house.”
(*Le Corbusier's Five Points of Architecture*).

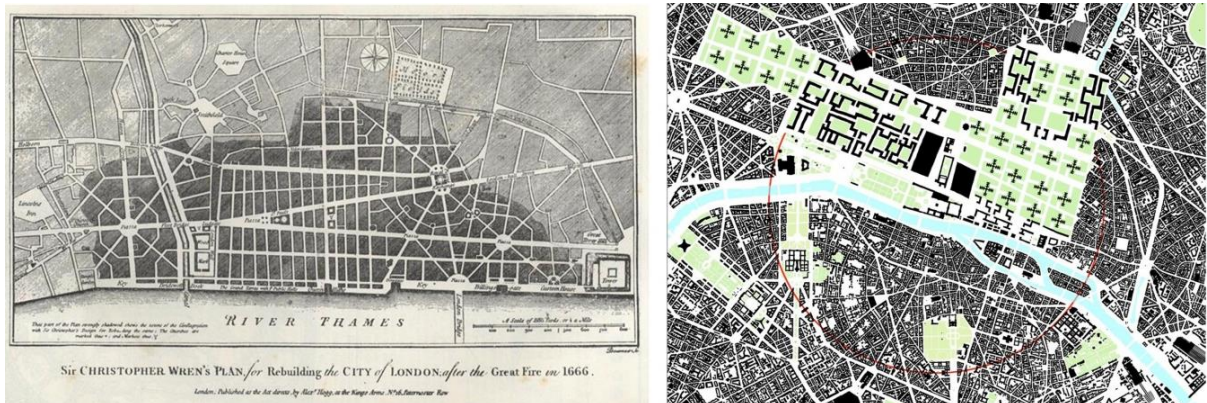


Figure 12: Plan of London, 17th Century, Christopher Wren, Traditional city plan (left); Contemporary City Plan, 20th Century, Le Corbusier , Modernist Plan (right); Source: "Wren's Plans After The Fire". 2016. BI.Uk. <http://www.bi.uk/learning/timeline/item1036>

However, modernist city planning method does have a lot of negative aspects on the city. Most of the new concepts in city planning have been applied depending on scientific studies and away from the traditional spontaneous planning and trying to create the best possible urban environments for the people to live, work, interact, and enjoy their lives. Anyway, many of these theories have done some harm to the city's structure and form both physically and socially. For example, both suburban and new urbanism has some good and bad effects on the urban form and structure on the city. In addition, (Cruz and Pinho 2009) illustrated the negative impacts of one of the recent trends in urban planning which is “closed condominiums” on the city form and structure.

We have introduced a new way to think about liveable city and dealing with problems of the modern city, which still exist. Today the most common urban problems, such as automobile, density, construction costs, sunlight, enough greenery for every citizen and quality of indoor and outdoor spaces are something we still have to deal with.

In addition, (Brownell, *Redeveloping Modern Housing Sites. Improving the Livability of the Ground Plane* 2007), in his work *Redeveloping modern housing cities – Improving the liveability of the ground plane*, stresses the importance of Corbusier’s work with the similar principles. In his opinion, Le Corbusier gave a look and a new concept of urban planning, for he had the audacity to dream of something new and different. Therefore, both the successes and failure is an important lesson for us making the Le Corbusier symbol of urban planning codes.” (Brownell, *Redeveloping Modern Housing Sites. Improving the Livability of the Ground Plane* 2007)

Altogether, the morphology of the modernist city plan can be described as being made up of buildings as space occupiers, while on the other hand, the traditional city model represents a plan which is shaped out of buildings – buildings are space definers. This is an important point in terms of exploring and a better understanding of housing typologies, hence applying it to future development in order to meet the requirements.

3.3. UNDERSTANDING OF HOUSING TYPOLOGIES

*“Everyone has the right to a standard of living that is adequate for maintaining the health and well-being of himself and his family, including food, clothing, **housing**, medical care and ... etc”*

(The first recognition of the right to housing is contained in an international instrument, paragraph 1 of Article 25 of the Universal Declaration of Human Rights)

Since the beginning of human existence, humans worked hard to build homes as shelters and made them appropriate for their needs and activities and adapted to the environmental and climatic and socio-economic conditions of the urban environment and building materials available there. This evolution and constant change on the physical and economic infrastructure of the house is what led to a great variety of forms and sizes of residential buildings which are represented by a large number of housing typologies.

However, we should pay attention to the difference between “Housing Typologies” and “Housing Grades”. (Zahia 2006) illustrated the difference as follows:

Housing grades

It means dividing the housing into different types depending on the range of economic and social foundations represented by a set of standards which are:

- The person’s share of the residential unit’s area.
- Internal and external finishing level of units.
- The number of vacuums in the residential unit.
- Location in the city.

We can identify four main Housing grades depending on these standards:

- a. Economic Grade: which is the lowest grade where the house contain the minimum needs. The location is far from city goods and the finishing of the building is low. The area of the house is between 60-75 square meters.
- b. Intermediate Grade: It is better than the previous one and normally represents a big part of the housing market. The unit area is between 75-90 square meters.
- c. Upper intermediate grade: Units here have a good standards and finishing. Usually built by private sector as an investment. The unit’s area is between 90-160 square meters.
- d. Special Grade: usually represents the luxury apartment’s buildings and private houses and villas.

Housing Typologies

It means dividing the housing into different types depending on the range of physical, architectural, and urban foundations. The housing typologies differ on different scales. These scales are: unit scale, building scale, complex scale. See figure 12.

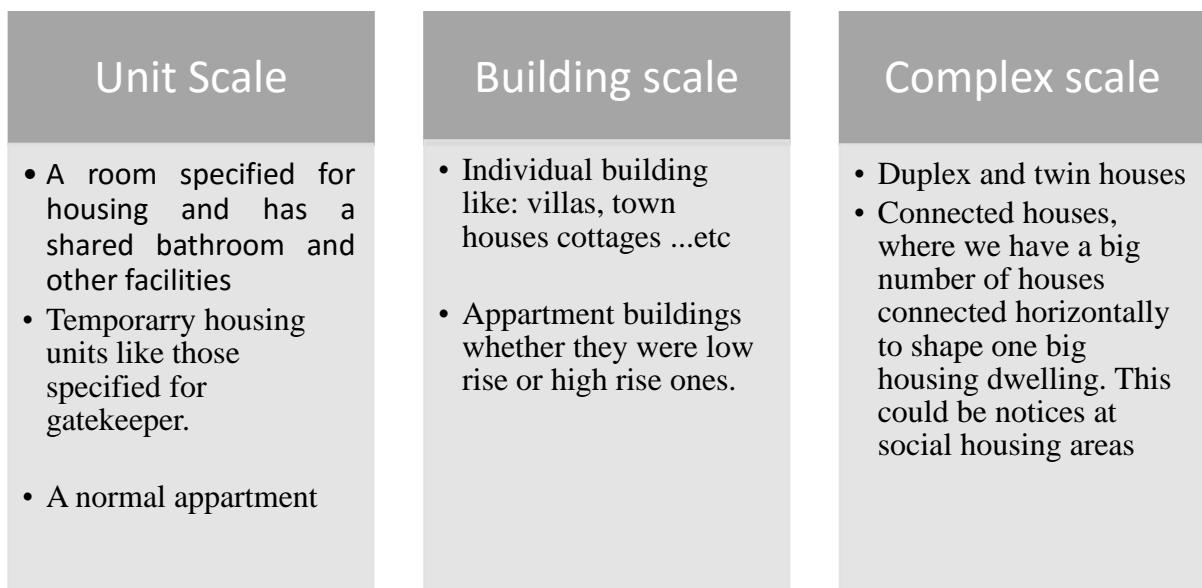


Figure 13: General housing typologies by division. Source: the author.

It was found that diverse ways of planning evokes certain behaviour in space, which directly affects the quality of urban space. The knowledge of the traditional and modernist plan is important for understanding of the comforted way of thinking while designing dwelling spaces.

Firstly, regarding traditional city plan and with reference to housing typologies, architecture is mostly low-rise. Consequently, there is no collective dwelling, therefore, the sense of ownership is expressed.

On the other hand, modernist plan has a concept with creating a free ground plane, so the architecture is mostly high-rise. High-rise dwellings are collective dwelling typology and they are completely different from the first one. As well, high-rise development is often linked to public housing, which is frequently considered as a low-quality way of dwelling, for the families with lower income.

There is also an interesting point about human psychology, space usage and safety. Researchers have studied the effect of usage of the space (for example building). The more people use the space, the less is sense of ownership. This is revealed especially in collective dwelling buildings, where damaged equipment, low maintenance and bad hygiene can be noticed. (Brownell, *Redeveloping Modern Housing Sites. Improving the Livability of the Ground Plane* 2007) (Santos, et al. 2013).

In short, height is directly connected to safety by the behaviour of people, and it is determined by the sense of ownership and actions of the citizens. Identification with the space encourages the creation of community and interactions among the users of the space, which can only be accomplished by creating suitable housing typologies, proposing the right programme and designing the human scale spaces (Santos, et al. 2013) (Li, Sun and Jones 2012).

However, it does not mean that high-rise buidlings are not an appropriate way of developing, but the context should always be reconsidered. This means that, housing typology, integrated with a suitable programme, design layout and public spaces is the right way to develop projects which meet the requirements of safety and sustainabilty. In addition, the following figures will illustrate ways of designing spaces in terms of creating urban blocks and housing typologies.

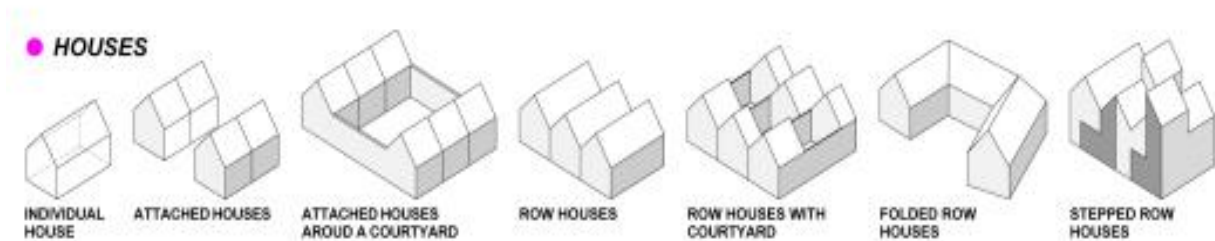


Figure 14: : Housing typologies; low-rise. Source: "Architecture | Density architecture". 2016. Densityarchitecture.Wordpress.Com. <https://densityarchitecture.wordpress.com/category/architecture/>.

● **HIGH-RISE BUILDINGS**

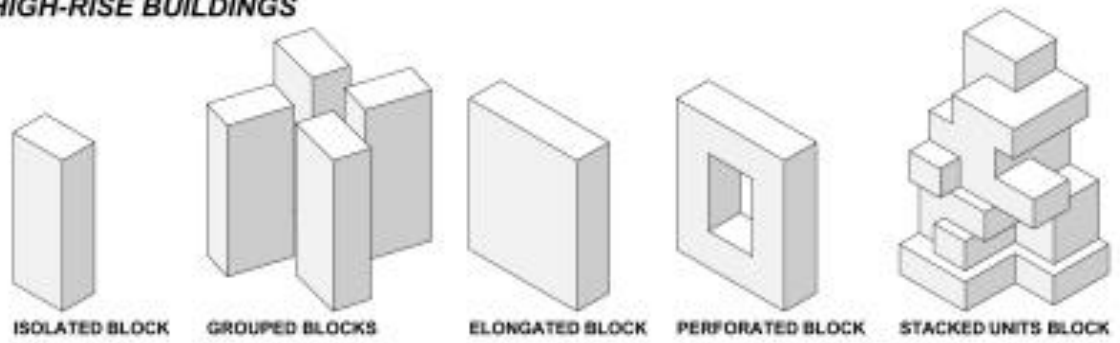


Figure 16: Housing typologies; high-rise. Source: "Architecture | Density architecture". 2016. Densityarchitecture.Wordpress.Com. <https://densityarchitecture.wordpress.com/category/architecture/>.

● **BLOCKS**

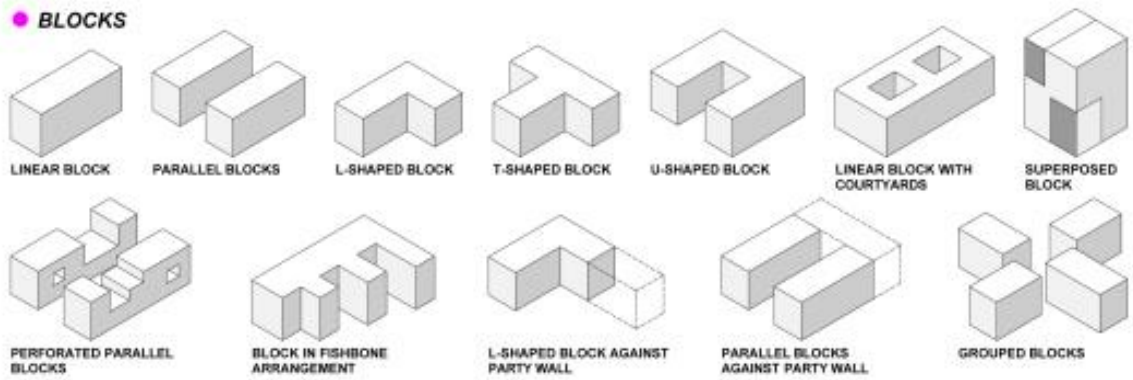


Figure 15: : City Block typologies. Source: "Architecture | Density architecture". 2016. Densityarchitecture.Wordpress.Com. <https://densityarchitecture.wordpress.com/category/architecture/>.

● **CITY BLOCKS**

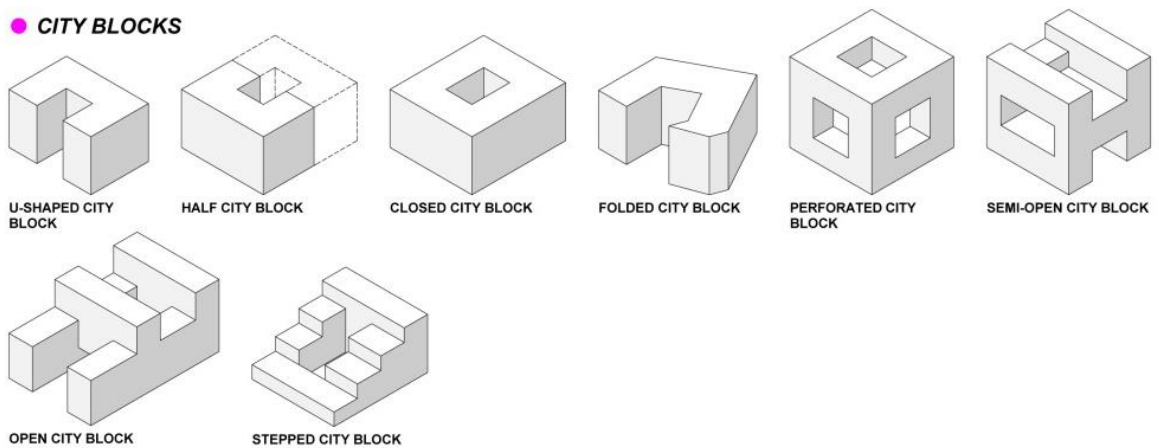


Figure 17: Block typologies. Source: "Architecture | Density architecture". 2016. Densityarchitecture.Wordpress.Com. <https://densityarchitecture.wordpress.com/category/architecture/>.

Choosing the appropriate typology and applying any of these forms, indicate deep comprehension of the site context, regarding all the special aspects of the site, such as the reflecting the needs and requirements in terms of liveability.

Apart from the mentioned, the designer should always bear in mind that planning which is sustainable and safe is something that will make a place liveable (and a higher cost on the real estate market). Finally, developing must be planned to meet these requirements, regardless of the chosen typology.

Moreover, it is essential to mention mixed-use development as a housing typology, mainly in the matter of programme, use and function. Mixed-use development represents a type of urban development which blends various uses; from residential, cultural, commercial or institutional uses. Programme is physically and functionally integrated, by providing spaces and pedestrian zones.

This way of development can be integrated in all forms mentioned above; from single building, a row of buildings, a city block or even entire neighbourhoods. On top of that, there are many advantages in applying mixed-use development in terms of safety and sustainability, let alone liveability:

- Achieving density.
- Creating of human scale spaces, because of bringing down of distances.
- Attracting diverse population – for dwelling or using all the facilities.
- Stronger character of the spaces and neighborhoods.
- Promoting of sustainable transportation through creating pedestrian and bicycle-friendly environments.

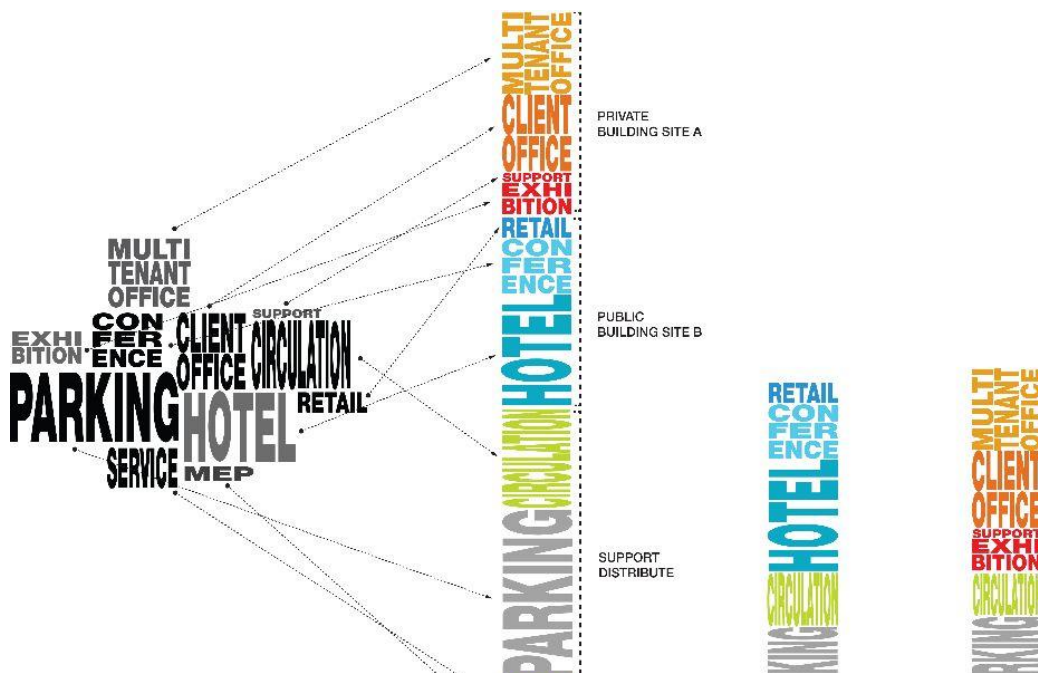


Figure 18: Mixed-use development diagram. Source: "Gallery Of PWD To Break Ground On Mixed-Use Development In Dali City - 12". 2016. Archdaily. <http://www.archdaily.com/629130/pwd-to-break-ground-on-mixed-use-development-in-dali-city/554a6f1be58ece61f20000aa-pwd->

3.4. HOUSING TYPOLOGIES IN PORTUGAL

I started by investigating urban theories and housing typologies, as a theoretical framework for future findings, such as the proposing adequate development for the particular site. However, this part of the work will also be consisted of theoretical findings, though linked with Portugal as a proposed context.

The structure of this section will introduce the brief historical overview of urban planning and housing, such as the liveability, quality of life and conditions of living in Portugal through ages. Furthermore, in the second part of this chapter, current housing situations will be identified. In addition, the following part will define the main problems and objectives. As our case study is in the north of Portugal the main focus will be on the typologies of the north region.

The aim of this section is to understand the context better (political, economic, social and historical aspects regarding Portugal), such as the defining complications in terms of liveability.

3.4.1. HISTORICAL OVERVIEW OF HOUSING TYPOLOGIES

Almost all European cities have been affected by profound changes which were caused by the industrialization process. The massive migrations from rural areas to cities led to increased necessity for housing. However, each country has its unique character and socio-economic, demographic, cultural and environmental circumstances

In the Portuguese case, in the 19th century, the first form of massive construction was dedicated to a particular form of housing – the islands (original Portuguese: as ilhas)¹. The islands have sheltered about 30% of the city population. The development first started in Porto and they presented the first initiative for housing this number of workers. These houses which were dedicated to the working class were built in a shape of narrow rectangles and connected poorly to the streets through some open spaces between private green spaces belonging to bigger townhouses. However, a few decades later, the first multifamily (collective) housing started to develop, mainly in Lisbon, while in Porto, the first appearance of social housing blocks started and there was a try to remove all the ilhas houses and replace them with these social housing blocks (Oliveira 2016), (Restivo, Alves, et al., 2012) (Teixeira 1996) (Abrantes, Alves and Abrantes 2014)

¹ “Ilhas” as they are known, are the main form of workers’ housing associated with industrialization in the second half of the century XIX. The physical and constructive solution of the “ilhas” is strongly linked to the city’s characteristics and are therefore very different from workers neighborhoods that have emerged in other European cities, and even in other Portuguese cities. (Montero 2014)

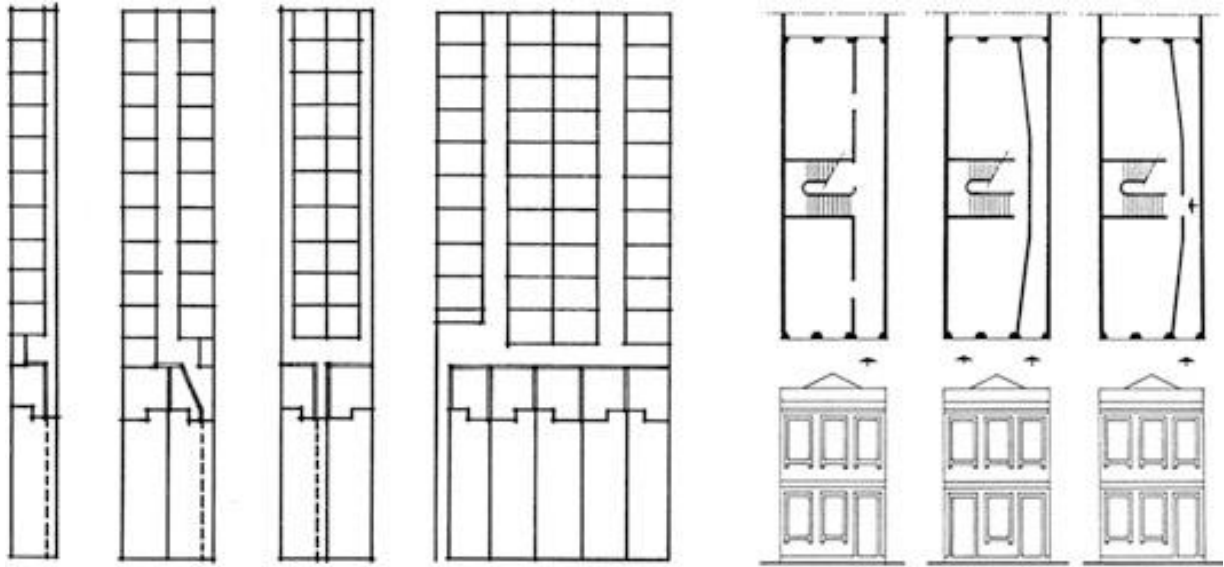


Figure 19: The ilhas of Porto. Source: (Teixeira 1996), (Oliveira 2016)

The period 1918-1933 was marked by developing interesting typologies in order to deal with urban, social and economic problems. This development had an accurate plan and design (Restivo, Alves, et al., Public housing renovation in Porto: typology versus occupancy density 2012). However, in 1935, more than 2000 “Economic Houses” in Porto were authorized to be built. The “Economic houses” were for rent, so-called “resoluble ownership”, including the opportunity for tenants to become owners by monthly rent during a 20-years period (Teixeira 1996) (Abrantes, Alves and Abrantes 2014). This increase considered very low compared with the subsequent period of 1950-1960, where about 19000 new buildings were built with an increased rate of 28% (Oliveira 2016).

During this period, some dramatical changes occurred not only in the number of constructed building but also in the housing typologies in Portugal. A quantum leap in Porto happened in 1940, where the first multifamily housing block consists of 117 dwelling were built for the working class families (Oliveira 2016). On the other hand, Lisbon was preparing for another qualitative shift influenced by the architectural and urban movements in English and French towns. This shift was the emerging of the first high-rise building typology in 1952 at “Estacas” neighbourhood. Afterwards, the neighbourhoods of “Olivas Norte”, “Olivas Sul”, and “Chelas” adopted this typology in their urban form in 1958, 1960, 1962 respectively (Ramos 2003).

In the 1950s, Porto started the program of “The Plan of Improvements”, which was a 10-year-old plan, carried out the construction of 6072 dwellings, which led to population migrations. From the

overcrowded center of Porto, people started moving to peripheral areas, so-called “areas of expansion” (Oliveira 2016).

In the recent history, we can say that Portugal has gone through three main stages, in the 1970s after the revolution, in 1980s after joining the European Union and 2008 after the deep economic crisis. Each period has imposed a number of constraints and changes in the urban development, and in turn on the housing sector and typologies.

During the ‘70s, and after the Portuguese revolution, the government strategy was directed to new construction projects and mainly towards social housing as a way of social and economic policy where the contribution of housing construction reached 75% of total constructed buildings (Restivo, Alves, et al., 2009). However, during the ‘80s and ‘90s, the Government changes policies in terms of introducing legalization. The legalization process was meant to encourage the private sector by providing private house ownership, such as the investments. This was due to the emergence from rural areas to the cities, mainly, after Portugal joined the European union. At that time, better jobs and income rates were provided in cities which led people to move to the urban centers (Alves and Veludo 2014)(Restivo, Alves, et al., 2012).

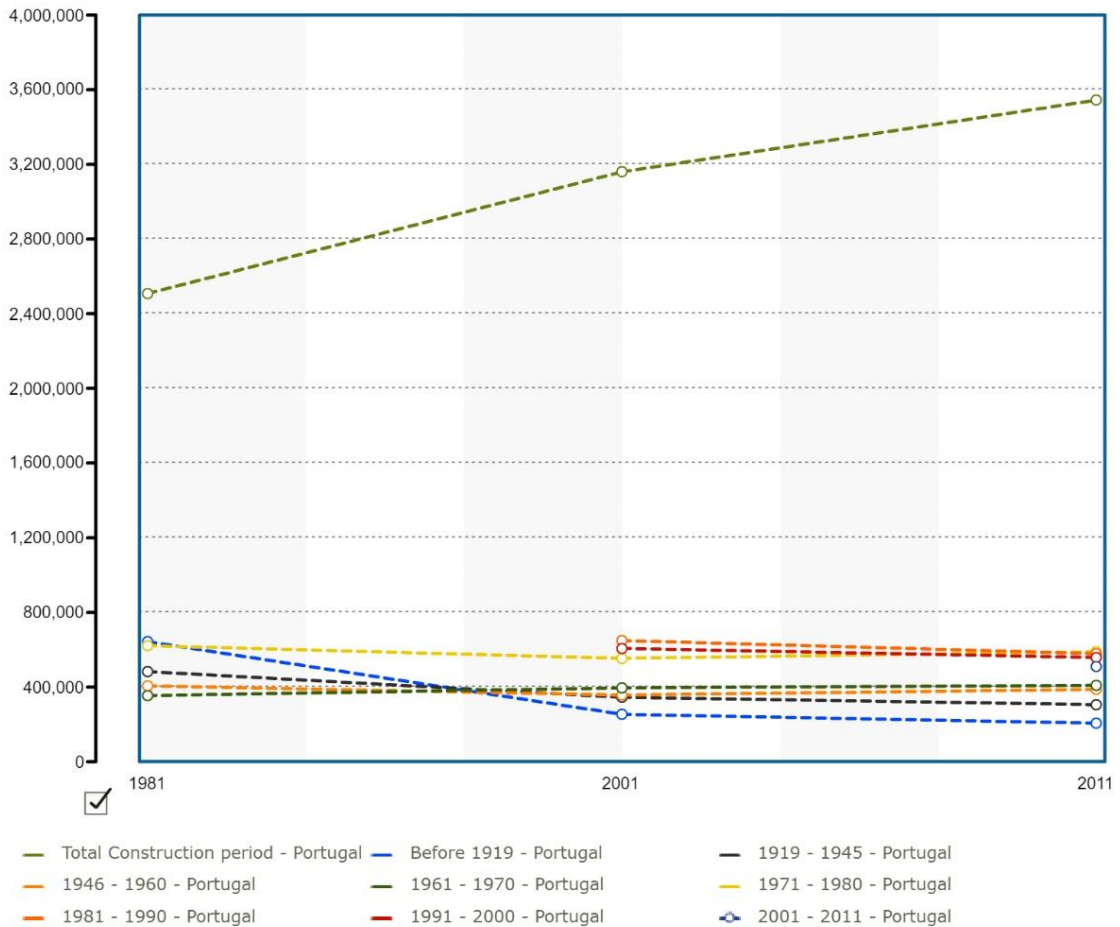


Figure 20: Buildings, according to the Census: total and by construction period. Data Sources: INE - II, IV and V General Housing Census. Source: Pordata.

The latest decades were marked by various circumstances in terms of housing and developing. Facing problems of self-help construction, such as the illegal construction, led to various complications. Although positive aspects in terms of strategies for poverty alleviation, such as the urban pilot projects, as a more socio-economic and humanistic approach, housing in Portugal is dealing with unstable real estate market and deterioration of buildings.

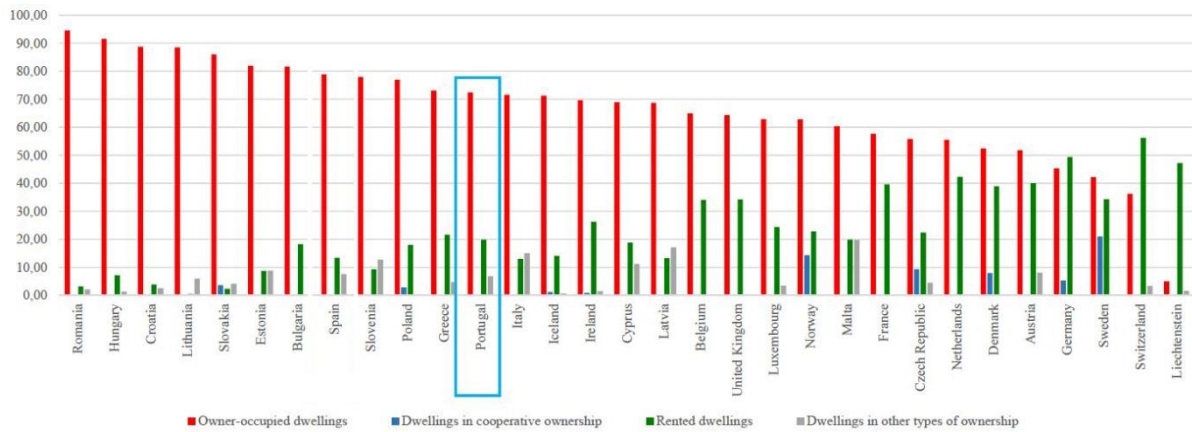


Figure 21: Housing tenure, European Union countries, 2011. Source: Eurostat Census 2011

3.4.2. PRESENT HOUSING MARKET IN PORTUGAL

Present economic circumstances, globalization processes and competitiveness require higher standards when it comes to construction and development processes, which consequently affects the real estate market.

Due to issues mentioned above, new operative approaches needs to be conducted in terms of urban development. However, this section will be dedicated to present socio-economic conditions regarding a better understanding of the political and economic context in Portugal.

Firstly, speaking of sociological aspects, many changes have occurred in recent decades, mainly because of the changing lifestyle and structure of the society (Loureiro de Matos 2012). Housing changes have followed due to factors of:

- Transformation of family structures, in terms of family members and the number of family members : more people living alone; increased aging households

- Different lifestyle and cultural patterns increased the necessity of creating new kinds of dwelling, architecture, and facilities
- The greater mobility of the job market in the face of residential mobility
- Economic instability, unemployment, and the economic crisis led to unstable housing market
- Increasing social and economic disparities among population – social segregation
- Economic immigrants as a consequence of overall unstable economic and employment market.

Changes in the economic and political climate led to problems and under-occupied dwellings in recent years, such as the necessity for renovation in many cases.

In most European countries, the majority of people in need for household is interested in the numbers of housing offered in market, more than the quality of those houses, this changes have been noticed in the last few days, and the insufficiency of those houses in the market is mainly affecting inhabitants with low to medium income, in the country of Portugal the majority of the houses is either not inhabited or need many alteration and rehabilitation (Loureiro de Matos 2012) (Tavares, Pereira and Moreira 2014).

The end of the 1990s, the interest rates rise in Portugal combined by altering the loan system supported by the government, caused many loans applications to be dismissed between 2000 to 2001, by 2002 the cancellation of the subsidised loan system caused many consequences to be noticed in Portugal (Loureiro de Matos 2012) (Tavares, Pereira and Moreira 2014).

Even though the interest rates started to drops by the year of 2002, but the demand of the houses in the market kept on degrading because of the economic crisis and the diligence the authorities had over the credit, this degrading caused the demand for the construction to be reduced, and various of the houses were kept unfinished causing less demand on it in the market further in 2002 (Loureiro de Matos 2012) (Tavares, Pereira and Moreira 2014).

Following the research and the facts provided, it is clear that there is an increased obligation for creating suitable and sustainable strategies for any future development. Moreover, the urban regeneration strategies are becoming a popular housing strategy, which will be explained in the following part of this paper.

To simplify, future development should bring environmental sustainability, buildings economy, however, by keeping ethical and cultural values of the developing area. The design must achieve “*the equilibrium between construction quality and the good design.*” (Restivo, Alves, et al., Public housing renovation in Porto: typology versus occupancy density 2012). We should be careful about the economic

factor in our construction and implement the ideas of the economy of planning but this should never be mixed up or misunderstood as being cheap housing (Restivo, Alves, et al., 2009).

3.4.3. URBAN REGENERATION AS A MECHANISM

The previous sections have shown that an ageing population and weak educational and socio-economic capital caused many problems which need to be solved in order to create liveable neighborhoods and spaces in Portugal. Moreover, signs of sporadic gentrification² have been noticed, which can cause much more serious problems in a long-term point of view.

Therefore, urban rehabilitation has been adopted as a mechanism for creating affordable housing, which is explained in the work of (Branco and Alves 2015) "*AFFORDABLE HOUSING AND URBAN REGENERATION IN PORTUGAL: A TROUBLED TRYST?*"

Due to the authors, the aim of the urban regeneration was to "*provide affordable housing for low- and middle- income families in Lisbon and Porto.*"

Reflecting the mentioned historical facts and political and economic circumstances which caused the movement of citizens from central areas to peripheral, it is emphasized that:

It is noticeable that in old centers of many cities in Portugal like Lisbon and Porto that the housing laws and policies in the those city's center encouraged the homeowners to neglect their old houses in order to acclimate with the low old rents, in addition of that the in the suburbs and surrounding areas many supported loans and tax incentives encourages the inhabitants to own and construct new residence, those reasons caused the population to be relocated in those suburbs and surrounding areas. One of the results of this relocation is that many houses in the historical center are empty and suffers degradation (Branco and Alves 2015).

Accordingly, the urban regeneration mechanism presents the possible long-term solution for solving many urban, social and economic issues. However, the process requires being conducted in a proper way, in order to avoid gentrification or ghettoization routes.

The authors finally conclude that setting the goals and precise strategies play the most important role in the process.

² Gentrification is a general term for the arrival of wealthier people in an existing urban district, a related increase in rents and property values, and changes in the district's character and culture. The term is often used negatively, suggesting the displacement of poor communities by rich outsiders. ("*What Is Gentrification? | Flag Wars | POV | PBS*" 2016)

In order to attract private investors to rehabilitate the old houses, many steps could be taken, for example settle a specific limit for the costs of buildings, on the other hand creating system depending on the costs for estimate the rents of the houses in order to attract more rehabilitation where it is needed, instead of directing the rehabilitation towards the financial sustainability of the house. To achieve best result in this suggestions a set of housing allocations should be settled for helping the tenants. (Branco and Alves 2015)

3.4.3. SUMMARY OF THE MAIN PROBLEMS

Portugal went through different phases regarding the housing market – from a shortage of housing to a market housing surplus situation and the success will depend only on positive development conducted in the proper way, which includes attracting investments and liveable and sustainable design of spaces.

Therefore, all the problems are part of the “cause and effect” process. Problems of economic inequality, housing needs on the other side, but also the lack of affordable housing and environmental assets presents just some of the factors which led to unplanned development.

The pivotal objective is creating liveable spaces, whether by traditional formation or the other way round – contemporary or hybrid. The most important factor actually is *human scale*, however not reflecting only the dimensioning of spaces, but creating a design approach with a humanistic way of thinking and sensibility.

3.5. HOUSING TYPOLOGIES AS A MECHANISM TO ACHIEVE LIVEABILITY

The main concern of this research is to deeply analyse the values of liveable spaces through theoretical approach, hence the approach can be used for creating a suitable strategy for developing a particular urban space.

Therefore, speaking about safety, community interaction and sustainable design (in aspects of ecology, economy, and society) is inevitable for gaining the desired result. However, housing typologies are one of the main factors which will affect these criteria.

Safety is valued through the factors such as traffic functioning, such as the traffic calming where needed, controlled access, local surveillance, but also to the inner feeling of safety (often connected to the influences of the visual perception of the environment, lightening, ownership of spaces...) (Abdul Mohit and Iyanda 2015) (Saraiva and Pinho 2011). Most urban planners agree that if the environment does not

feel safe, it is inherently less liveable (Abdin 2010) (Haj Hasan 2007) (Saraiva and Pinho 2011). Moreover, many ideas, research, guides, and manuals have been made to measure and apply safety such as “TDM Encyclopaedia”, which is a mobility manual in British Columbia, lists safety as one of the first components of liveability.

Community interaction is also one of the key factors of new urbanism and the designing of liveable spaces. The term refers to strategies which include human scale, street life, mixed-up use development, compact development, density and preservation as its principles.

These factors are mutually linked, since “*the density supports active users at the ground plane, increasing the sense of community and compact development allows a greater concentration of different users, usually within walking distance,*” (Brownell, *Redeveloping Modern Housing Sites. Improving the Livability of the Ground Plane* 2007).

In the last few decades, sustainably and green design has attracted much attention. New urbanism simply must include sunlight, water absorption, preservation, sustainable design and compact development in its strategies. All the projects should take into consideration the mentioned factors and implement them in the design solution process as much as possible. Choosing the appropriate housing typology regarding the context makes the first step.

3.5.1. BRIEF THEORETICAL OVERVIEW

To simplify this subject we can analyze housing typologies through:

1. Housing typologies in terms of physical form and type of residential dwelling
2. Housing typologies in terms of ownership

Housing typologies in terms of physical form and type of residential dwelling: This division refers whether it’s a single-dwelling, or whether it’s a multi-dwelling typology. Accordingly, the dwelling type affects the physical form of the house. This division can be also seen as a private and collective dwelling, which can be, yet not necessarily, linked to ownership. The position and placing of the houses significantly affect the criteria of safety, sustainability and creating communities.

Housing typologies in terms of ownership: This is closely linked to property law, therefore it varies depending on the country, but generally it can be divided in private or public ownership.

Future studies draw on research in terms of housing typologies and their position – nonrelated street units and related street units. In this section of the work, the positive and negative aspects of both

approaches will be investigated. The theoretical concept can be followed through the shown diagrams and main points regarding liveability.

- **Social interaction :**

- *Non-related street units:* The units have little or no contact with the street and social interaction with other residents in the street is discouraged.
- *Related street units:* The symbiosis of the unit and the street encourages social interaction and allows the street to become a focus for community life.

- **Sense of control (directly indicates feeling of safety)**

- *Non-related street units:* Lack of contact between the unit and the street makes resident control of the public environment an integral part of their living area.
- *Related street units:* The proximity of the units to the street encourages attitudes towards their public environment.

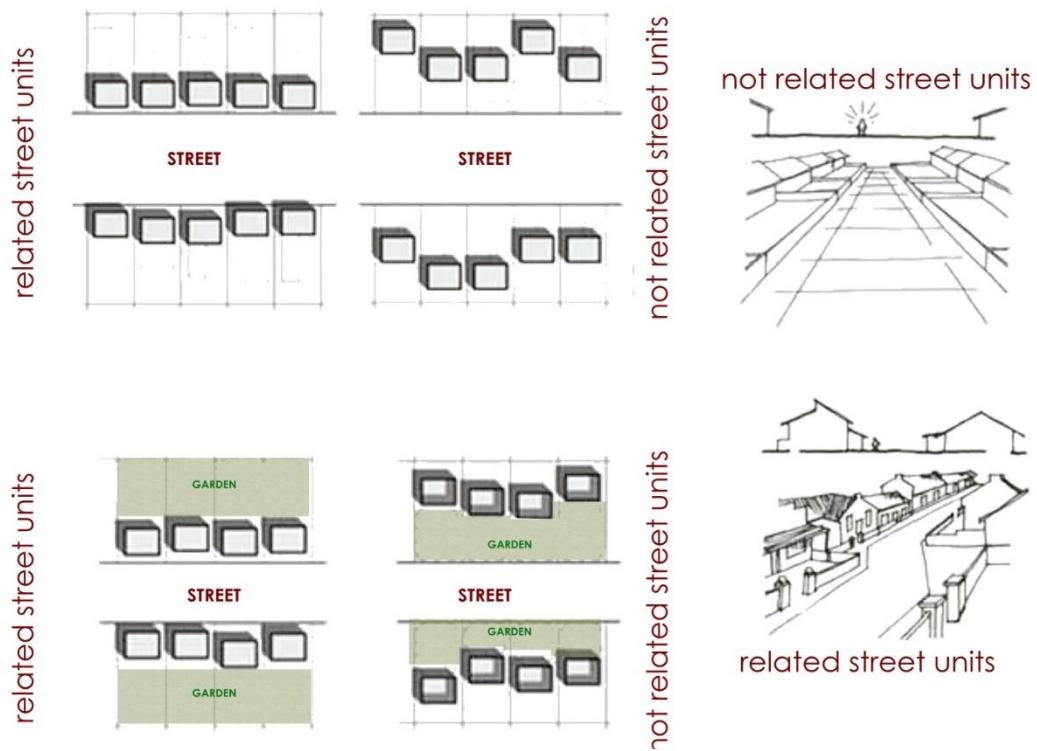


Figure 22: Diagrams of street unites and their position. Source: The author.

- **Defensibility (directly indicates feeling of safety)**

- *Non-related street units:* Surveillance of street space from the unit is impossible and street life is discouraged owing to the threat, crime and lack of personal security.
- *Related street units:* The natural surveillance resulting from the units proximity to the street encourages the growth of street life and gives residents a sense of defensibility.

- **Defining space**

- *Non-related street units:* Street space is poorly defined resulting in little or no spatial. Human scale is compromised and the street loses a sense of place.
- *Related street units:* The 3-dimensional urbane qualities of the street are optimized. The street takes on a sense of place rather than merely being a ventricular move.

- **Gardens and greenery**
 - *Non-related street units:* Relatively higher costs are required to maintain front gardens in order to enhance the appearance of the street scene.
 - *Related street units:* Few or no maintenance costs are required along the street in order to enhance the street scene.

- **Costs and economic aspect**
 - *Non-related street units:* Cost of servicing each site is proportionally higher by service required from the boundary of the site to the unit.
 - *Related street units:* Servicing costs are reduced by plugging unit connections directly to street services.

The study presented in this part of the work will be essential for creating an initial concept for developing the proposed site. The following work will take into consideration contextual aspects of the location, along with required features regarding liveability.

3.6. PROMOTING ACCESSIBILITY THROUGH HOUSING TYPOLOGIES

Access to people, spaces, facilities, goods and general accessibility presents one of the main factors regarding liveable spaces. The better and more efficient accessibility is, the quality of urban spaces is on a greater level.

Accessibility can be linked to various aspects – transportation, pedestrian or accessibility to a particular zone and it is often regarded as one of the main issues in the process of evaluation of the quality of urban spaces or neighborhoods (Litman, Evaluating Transportation Land Use Impacts Considering the Impacts, Benefits and Costs of Different Land Use Development Patterns 2016).

The term which is often used to express the instruments for creating linking paths between urban patterns, facilities, users and nature are defined in the literature as “urban pathways”. The importance of

urban pathways lies in the fact that well organized and designed urban pathways allow functioning of the space on different levels (Rode and Floater 2014).

Urban accessibility pathways is a term used to define pathways which have strong depending over the various principal evolution patterns that have been developed over the combination of urban spatial space and structures mixed with the transport system established to provide access for people to transport and to move goods and information.

One of the most important characteristics of the urban accessibility pathways is the amount of accessibility based on either the physical approximation of the distance between the starting points and the final destination, or the transportation system if its involve dependency on the private or public vehicles (Rode and Floater 2014) (Litman, Evaluating Accessibility for Transportation Planning 2008).

“The first principle of achieving accessibility in cities is based on the physical concentration of people, services, economic activities and exchange. In that regard, the most defining characteristics include residential and workplace densities; the distribution of functions and degree of mixed use; the level of centralization; and local level urban design. More compact and dense cities are typical examples of facilitating agglomeration economies through greater proximity. Creating accessibility based on physical proximity implies a particular attention to planning, designing, building and managing the specific local condition at a human scale.” (Rode and Floater 2014)

The particular case of Vila nova de Famalicão has three basic points which should be linked and become accessible, not just physically but in terms of function, usage and users of the space. Those three points are actually the targets of interest which cannot be analyzed one without the other, although their connection (in every mentioned way) is very poor – Historical City Centre, Green areas, and the Developing area.

However, the green area and the developing area are physically separated from the historical part of the city by a high line, which makes those places underused, since it is used only by the local users. On the other hand, the neighborhood is mainly for use of residential dwelling; therefore there is no necessity to attract users “from the outside” (Bateman, et al. 2001).

Although there is clear evidence that this is a neighborhood for residential use, connecting this area with the historical city Center would undoubtedly bring life to the area. Treating this land with the green area as an “extended part” of a historical part of the city could be a proper strategy for developing the area, but also solving the problem of safety and maintenance of the green area (Litman, Economic Value of Walkability 2003).

Therefore connection of both sides divided by the Highline should be conducted on two levels:

- Physical level – solutions which involve infrastructure projects and promoting of pedestrian zones and cycling as a form of transport
- In terms of programme – bringing a certain programme from the historical part into a green area, which would not endanger the local community, but would attract additional users to the underused space. This would produce more vivid spaces in terms of reducing criminal activities.

In conclusion, accessibility would be achieved by creating urban patterns for pedestrians and cycling, with a strong connection with the historical part of the city. Since placing these urban patterns through the underestimated urban area is rather inevitable, the whole area will become more vivid. Creating these patterns will require creating parks and additional commercial programmes which will lead to better maintenance of the space and more intensive usage of the space.

3.7. PROMOTING SAFETY THROUGH HOUSING TYPOLOGIES

The safety of the spaces is defined by the design of the streets and the structure of urban patterns. Therefore the influence on the level of safety is directly linked with the urban layout overall. However, there are some additional aspects that have an excessive impact on the matter of safety: activities and the programme of the space, sightlines, building design, creating boundaries, lightening, landscaping, and signs (Carmona, et al. 2003).

Additionally, there are also details which should be taken into consideration in the design process which should produce safe spaces – such as choosing the appropriate materials, good management of buildings, good maintenance and making a sense of community and neighbourhood.

Speaking of the proposed site, Vila nova de Famalicão, safety presents one of the main problems and one of the objectives of this work. The green areas, which are underestimated and underused are exposed to criminal activities and signify the dangerous areas for local community members

Nevertheless, the problem of safety is directly linked to the accessibility issue, mentioned above, which means that treating one problem properly will affect the other in a positive way. The most important idea in the relationship between the housing typologies and urban safety is that we want to create housing buildings that achieve the comfort and relaxation that supposed to exist in those zones without isolating it from the surroundings or make it a gated community guarded by police. These isolated buildings and gated communities or what is called closed condominiums affects the overall structure and form of the city and created a fragmentation in the city. Even though the selling title of these closed condominiums

is more liveable urban environments, they may cause harmful effects on the overall urban community and might make it a worse place to live in as (Cruz and Pinho 2009) concluded.

However, Safety problem could be treated by promoting housing typologies that can provide the following:

- Creating design patterns to encourage walking, cycling and using the green zone as a pleasurable transit area to housing part of the neighborhood
- Introducing of various programme possibilities – transit area, but also zones of parks and recreation, such as the appropriate commercial zones.
- Creating a high-quality lightening master plan which will attract people to use the green area (parks, recreational and commercial zones) not just by day, but also by night.
- Designing the housing typologies in a way which will not create “urban pockets”³ or any other places which can become spaces of low maintenance and criminal zones.
- Choosing of the proper materials which will not allow vandalism and which are cost-effective

Moreover, the participative approach in urban design⁴ should never be estimated in projects like this, mainly because including local neighborhood into design processes provides a sense of connection and



³ “Left-overs” of urban spaces

⁴ Participatory design (originally co-operative design, now often co-design) is an approach to design attempting to actively involve all stakeholders (e.g. employees, partners, customers, citizens, end users) in the design process to help ensure the result meets their needs and is usable

belonging to the site. Neighborhoods which are treated by the locals proved to be more safe, liveable and pleasant.

3.7. PROMOTING SUSTAINABILITY THROUGH HOUSING TYPOLOGIES

Firstly, it is good to start with the definition of sustainability and sustainable design places in general context. Understanding of this term on a large-scale will enable leading to sustainable solutions for small-scale projects, such as the proposed project of the Vila nova de Famalicão.

Sustainability is a common and very popular topic in recent years, in almost every aspect of the marketplace. When speaking about sustainability we can speak about large scale and small scale of the sustainable development, but none of it should be underestimated (Leyden 2003).

One of the most famous definitions regarding sustainability is the one from the Brundtland Commission in 1987 :⁵

“The ability to meets the needs of the present without compromising the ability of future generation to meet their needs.”

Therefore, speaking and thinking about sustainability is not just some kind of “empty-talk”, it has much greater significance than that – it is something this every future generation depends on.

Preserving of natural capital is something we all should care about; bearing in mind that natural capital

Figure 23: Diagram of Participative Approach. Source: 2016. Nickwrightplanning.Co.Uk.
<http://www.nickwrightplanning.co.uk/wp-content/diagram.jpg>.

is everything around us – soil, air, water, geology, and all living things. Beautiful greenery and amazing wildlife resources are not unlimited and we have to be smart in order to provide life in future generations (Chaffer 2015).

⁵ Formally known as the World Commission on Environment and Development (WCED), the mission of Brundtland Commission is to unite countries to pursue sustainable development together.

Regarding the proposed site, the design should include different points of sustainable design:

- Preserving the greenery and the other wildlife if possible
- Promoting sustainable transport through design which will encourage walking and cycling
- Using of sustainable materials which can be recycled
- Preserving of energy by developing a smart concept of housing where usage of electrical energy and water is reduced.

3.7.1. ECO URBANISM:

One of the most important features on the subject of sustainable design and development is undoubtedly ecological urban planning. It is not a new approach and it can be recognized in basic concepts and principles.

Numerous researchers, theoretic, urban planners and architects have been working on this subject, from Hippocrates to Alberti, Ebenezer Howard, Kevin Lynch and many others. Thinking in an ecological way in design and creative processes means basically treating the city as an *ecosystem*.

When we say that the city is an ecosystem or the known term as “Urban ecosystem”, we mean by that what we mean when we speak about any other ecosystem. It is the overall of every living component of the including its residents and the relationship between each other and with the physical built environment around them (Pickett, et al. 2011). In this regard, each city is a big urban ecosystem that consists of a number of smaller ecosystem which is the urban communities, residential areas, parks,.. etc. (Spirn 2014)

To conclude the story about eco-urban design, some of its basic points will be listed:

- Eco-design is a design with the mission to connect people and other living beings, but also the people among themselves.
- It is also the connection of the system values at different levels of space, in order to become aware of nature and to integrate people as a part of nature.
- Eco-urban design = nature + culture , and it is a process that encourages creativity
- While designing, it is more than important to be aware of the context – a good solution in one context is not necessarily appropriate to the other. Therefore, context is an unavoidable starting point.
- It is more than important to avoid uniformity in the design process and to look up to sustainable urban strategies.

- While considering appropriate design and planning solutions, we should think about: nature, community, place, context, mobility, water, waste materials, artefacts...
- Culture should be treated as a part of nature and not its opposite. This is one of the important premises underlying urban design.
- The ecosystem is recognized as a value and it is important to be in balance. When the ecosystem is degraded, problems start to grow.

3.8 CONCLUSION

As a result of the research done in this chapter, I reached a conclusion that Housing typologies are for sure something much more meaningful than a form or a shape of the residential building or complex of buildings. It is a main component of the urban environment, affect it and affected by it. It is related to the social, economic, cultural, environmental characteristics of the place and deeply related to its history. In fact, we can track the history of an urban community by studying the typologies of its buildings.

In regards to the issue of liveability, In any urban community, housing is considered to be the core of life. A well-planned housing means that we will get a good urban environment to live in. The housing typology can increase or decrease the quality of all components of the urban environment and the contrary is also correct.

In order to create a good housing typology, we are supposed to deeply analyse the characteristics of the area and know how the new housing typology can help us improve the quality of life in this area and solve the problems that affecting its liveability.

In regards to our main aspects of the study (Accessibility, Safety, Sustainability, and Community), Housing typologies can play a vital role in promoting each of them. The main results or intervention steps can be summarised as follows:

Regarding Accessibility:

- Flexible ground plans that don't make the building as a barrier in the urban environment.
- Multi uses activities on the ground floor in order to create interesting and attractive activities to drive people to the area.
- Link the buildings with the surrounding environment and not making them closed or isolated.

- Using the land for other purposes than car parking, and make an underground parking to serve the needs of residents.

Regarding Safety:

- Open buildings to the surrounding environment.
- Respecting the human scale and not building too high buildings.
- Directing the buildings in order to achieve local surveillance over the surrounding environment.
- Choosing proper finishing materials that can resist vandalism.
- Adopting the strategy of moving from the public to private.

Regarding Sustainability:

- Most important thing is preserving the natural environment in the site.
- Using sustainable materials.
- Directing the building in order to get the best possible use of the natural sunlight.
- Preserving of energy by developing a smart concept of housing where usage of electrical energy and water is reduced.

Regarding Community:

- The building should provide meeting areas, like yards for example, to encourage the residents to get to know each other.
- Multi uses ground floor.
- Human scale.
- Street life.

4

THE CASE STUDY

4.1. PREFACE

In this chapter, I will deeply analyse the case study area based on statistical, social, and physical aspects. This study will be done in three main stages:

- **Stage 1 (Objective study):** in which I will evaluate the study area and its surrounding adopting “from inside to outside and from outside to inside” strategy. This study will be based on the urban plans of the area and observations from the field visit to the area. In this stage, I will assess the main factors studied in this work which are (accessibility, Safety, Sustainability, and community interaction)
- **Stage 2 (Social and economic characterization):** in which the study of population and the economic status of the residents of the city of Vila Nova de Famalicao will be done based on statistical data.
- **Stage 3 (Comparative study):** Mainly, this study is about the “Parque de Sinções” as a main element of our study area and the whole urban environment of the location. This study will be done by calculating the number of users of the park in specific hours of the day and compare our findings with the number of users of Jardim Dona Maria II which is located only 10 minutes walk from “Parque de Sinções”.

4.2. INTRODUCING THE AREA

Vila Nova de Famalicão is today a land often mentioned as one of the main cultural, commercial and industrial centers in Portugal. With its history which dates back to 1205 the city gained a rich historical and cultural stockpile.

The city is located in the northwest of Portugal in a Strategic location between the cities of Braga, Guimaraes, and Porto. Administratively, Vila nova de Famalicão is a municipality in Minho district in the north of Portugal. In turn, it is divided into 34 smaller civil parishes. The total area of the municipality is 201.6 square Kilometers. The total population due to the 2014 census is 133,494 with only 0.9% foreigners. It is mainly an industrial and agricultural community. Vila Nova de Famalicão hosted the headquarters of the largest and best companies in various industry sectors: the textile, tires, clothing, food sector, in the construction of public works. Which in turn reflected positively on the economic status of the city. Further studies and information will be presented during the work.

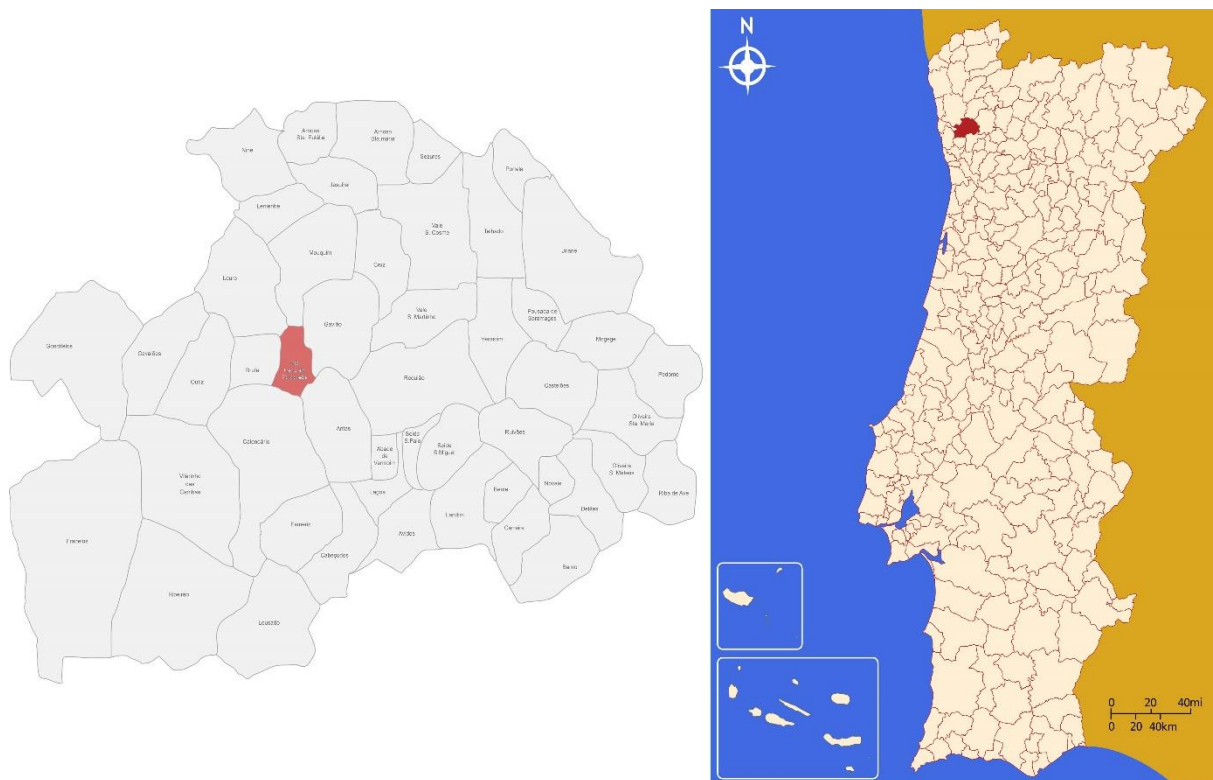


Figure 24: Vila nova de Famalicão location. Source: Municipality of Vila nova de Famalicão.

4.2.1 THE CASE STUDY LAND CHARACTERISTICS

The land is located near the “rotunda dos bombeiros”, very close to the center of the city of Vila Nova de Famalicão. The surrounding area has a good level of urban development with the existence of several housing buildings. The zone is infrastructure and framed with average socio-economic characteristics.

According to its geographic location and its proximity to the center of the city, it is obvious that the land has a strong potential to be urbanized as a housing complex.

The site has good road links where the “rotunda dos bombeiros” is about 200 meters from the site. There is a good road and the area is only 500 meters from the A3 motorway, and only around 5 minutes, 15 minutes from the city of Braga and 20 minutes from the city of Porto.

The land has the shape of a rectangle, divided into three squares, with a slight slope. Each square has the dimensions of 69 meters wide in front of “Barão de Joane” Street and 64 meters deep with a total area of 4480 square meters. Thus, the total area of the case study land is almost 13000 square meters. The land is totally empty and does not have any kind of structure.

The land is aligned with a big garden named “Parque de Sinçães”. This garden has a big effect on our project land and will be included in the analyses of the area as a part of our project.



Figure 25: The land of the case study. Source: The author.

4.3. OBJECTIVE ANALYSES

As noted earlier, the case study is located in Vila Nova de Famalicão city. It is about 13000 square meters specified to be developed as a housing complex on three plots of land shaped a square with about 4300 square meters. In addition, this plot is located and have a great view on the “Parque de Sinções” which is fundamentally an expansion of our case study area and will have an important role in promoting liveability.

The general observations on the study area were the very poor connectivity between it and the city center which is only 500 meters from the site caused by a highway playing the role of barrier between the area and the city center. In addition, a general viewpoint on the unsafety of the area from the people there and especially at night. Also, the issue of the lack of the community interaction is obvious.

In this objective analyses, I will depend on the plans of the area and my observation on it from my field visit to the city of Vila Nova de Famalicão. Also, some statistical data.

4.3.1. ASSESSMENT OF ACCESSIBILITY

“The road is now like television, violent and tawdry. The landscape it runs through is littered with cartoon buildings and commercial messages. We whiz by them at fifty-five miles an hour and forget them, because one convenience store looks like the next. They do not celebrate anything beyond their mechanistic ability to sell merchandise. We don’t want to remember them. We did not savor the approach and we were not rewarded upon reaching the destination, and it will be the same next time, and every time. There is little sense of having arrived anywhere, because everyplace looks like noplac in particular”. (Kunstler 1993)

In order to reach the city of Vila nova de Famalicão, Train or buses are the only means of public transport systems that lead us there. Once we are there, Walking or car driving are the main tools of moving inside the city with the existence of the Taxi Service. There are no internal bus routes in the city.

Regarding our study area, It is located about 1 km far from the train station which is a walkable distance and takes 15 to 20 minutes’ walk. Reaching the boundaries of the area is easy by car, but not that easy by walk.

There are two main roads that determine the area which are: Av. Do Brasil from the west to the east and Av. Carlos Bacelar (N 14) from south to the north. From the other side, there is a medium car way that drives us to the area which is Rua Barão de Joane. However, those roads are working as barriers that

isolate the area from the city center and the only way to cross them is by two small narrow bridges and one cross road over this highway. It is noticeable that the overall function of the two main roads is to cross the area not leading to it. In regards to the walkability situation, the area is facing a large park which is mostly empty because of many reasons and the most important one regarding the accessibility is the difficulty in reaching it from the city center. The Park itself has some walking paths but no interesting activities to attract people. See figure 26.

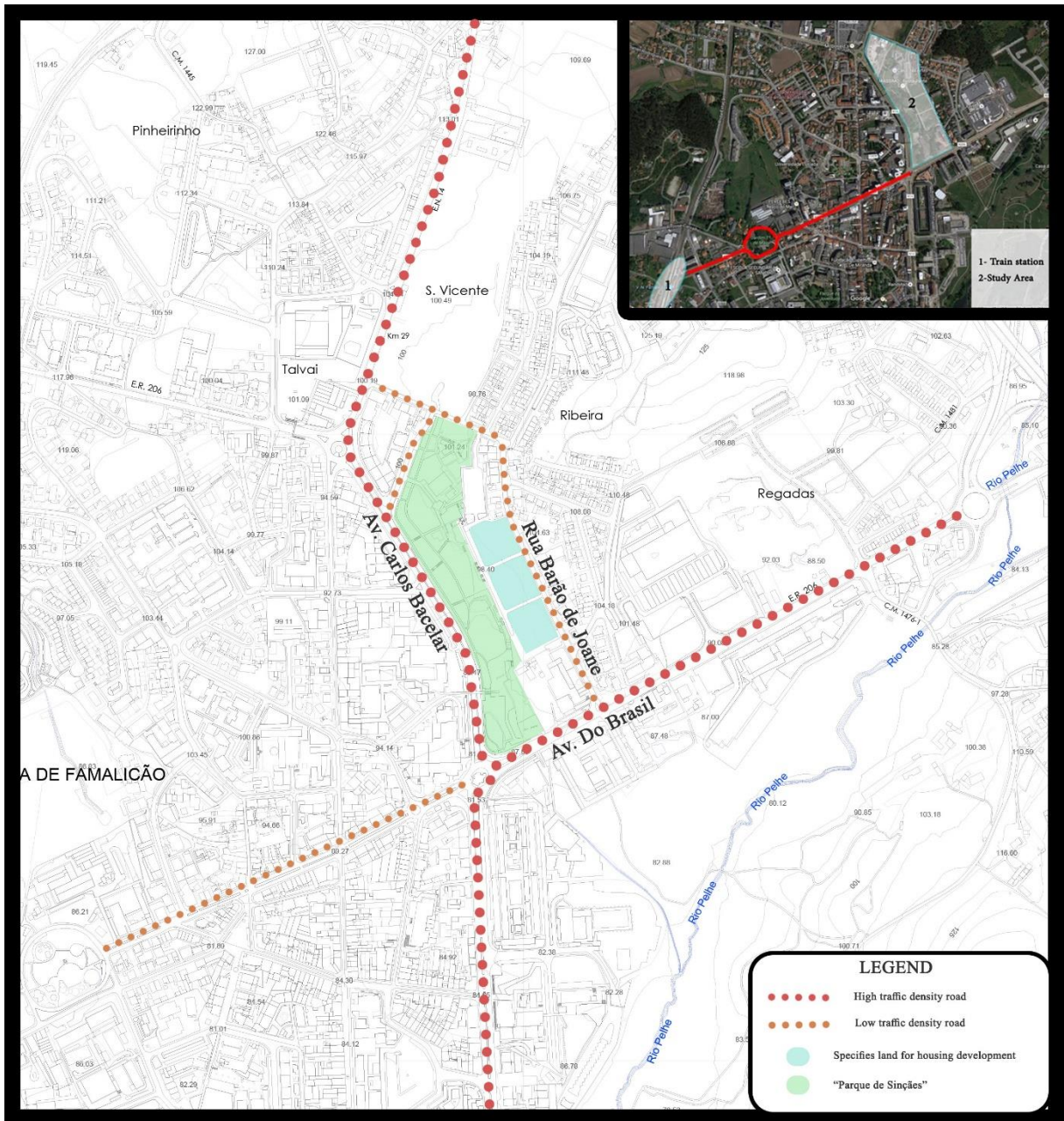


Figure 26: Analysing the accessibility to the study area and the surrounding roads. Source: The author.

In order to better understand the ways of moving in the area an analytic study of the numbers of the cars crossing the roads around the area and compared them with the number of people crossing “Parque de Sinções”.

The analysis data provided was conducted by visiting the area for five consecutive days- From Friday till Tuesday- and other shorter visits during the period of realizing this work. All the visits were in normal days with no special occasions and in sunny and moderate weather. The counting was made in four main periods of the day (Morning, Noon, Afternoon, and Night). The data will be presented in tables and separating the data of working days from the weekends.

Table 3: Average traffic density per 10 minuets. Source: The author

Street	Time (Weekend)				Time (Work days)			
	9:00-9:10	13:00-13:10	18:00-18:10	23:00-23:10	9:00-9:10	13:00-13:10	18:00-18:10	23:00-23:10
Av. Do Brasil	121	234	209	107	166	268	245	93
Av. Carlos Bacelar	132	314	312	176	184	348	356	197
R. Barão de Joane	31	19	22	10	35	17	26	12

Table 4: Average number of Pedestrians per hour. Source: The author. Notice: these numbers are only for the people who are crossing the area as a kind of transit or movement.

Time (Weekend)				Time (work days)			
8:00-9:00	12:00-13:00	17:00-18:00	22:00-23:00	8:00-9:00	12:00-13:00	17:00-18:00	22:00-23:00
14	18	20	26	36	32	30	21

Based on the data in the two tables (Table 3 and Table 4), the heavy reliance on car use can be easily observed and the significant decline in the number of pedestrians. On average, each hour in a weekend (Saturday and Sunday) we have 1006 cars crossing “Av. Do Brasil”, 1400 cars crossing “Av. Carlos Bacelar”, and 120 cars crossing “Rua Barão de Joane”.on the other hand, the average number of pedestrians who are crossing the area in one hour is only 19. In a work day, there is a slight difference but it is not significant. In “Av. Do Brasil”, the average number of cars in a hour is 1142 while in “Av.

Carlos Bacelar” is 1627 and “Rua Barão de Joane” is 135. The average number of pedestrians is 30.

Table 4

The data clearly shows that the overall accessibility and especially walkability of the area are in low levels due to the low number of pedestrian users.

The high volume of traffic in both “Av. Do Brasil” and “Av. Carlos Bacelar” emphasizes that these streets basically don't provide a real service to the area in terms of accessibility and ease to reach. On the contrary, it shows that instead of allowing the people reaching the area, they are driving them to other destinations and just passing through the area. In fact, they do more harm than benefits on the accessibility to the area as they represent a physical barrier separating the study case area from its neighbouring areas and most importantly from the city center. The only street that truly serving the area and gives us the ability to reach it is and “Rua Barão de Joane” with a moderate volume of traffic.

Comparing these findings with our previous theoretical study of the issue of accessibility and its relationship with both liveability and housing typologies shows that there is a need to set us a number of interventions that should be done in our proposal for the area in order to increase the accessibility to and in the area. The most important issues we must focus on are:

- Solving the disconnectivity between the area and the surrounding, and most importantly with the city center.
- Using “Rua Barão de Joane” as the main way to reach the proposed housing complex and serve it.
- Creating an urban environment that drives people to the area and promoting walkable pathways in the area and between it and the surroundings.

The previous study was focused on the borders of the area, however, in order to understand the issue in a better way we are supposed to study the accessibility factors within the area.

The specified land for the development of the housing complex is totally empty and there is no kind of any activity other than the nearby housing buildings. The main road that leads to the territory is “Rua Barão de Joane” which is already the main road that serves the neighbouring housing buildings. On the other side, an unpaved small street exists with a use like parking lot more than a street. Therefore, the focus on the study of walkability will be on the “Parque de Sinções” which is a unique component in the urban environment of the study. However, in spite of the strategic importance of this public space, it was noticed from the observation of the field visit to the area that the physical elements are in a good condition with some minor issues.

Anyway, regarding the size of the garden and its location near the city center, it is obvious that the number of users is pretty low. The majority of the users are only crossing through the park using its paths as Sidewalks for the “Av. Carlos Bacelar” where no sidewalks are provided. In addition, there are only three points that connect this park to the city center which are one crosswalk, and tow narrow bridges over “Av. Carlos Bacelar”. The lack of activities and the equipment in the park were pretty obvious. The park includes a number of buildings that provide some important services. However, the Municipal library located on the borders of the park is the main activity drives people to the space. Anyhow, it is closed during weekends and opens for only 3 to 5 hours on working days. Also, “Casa das

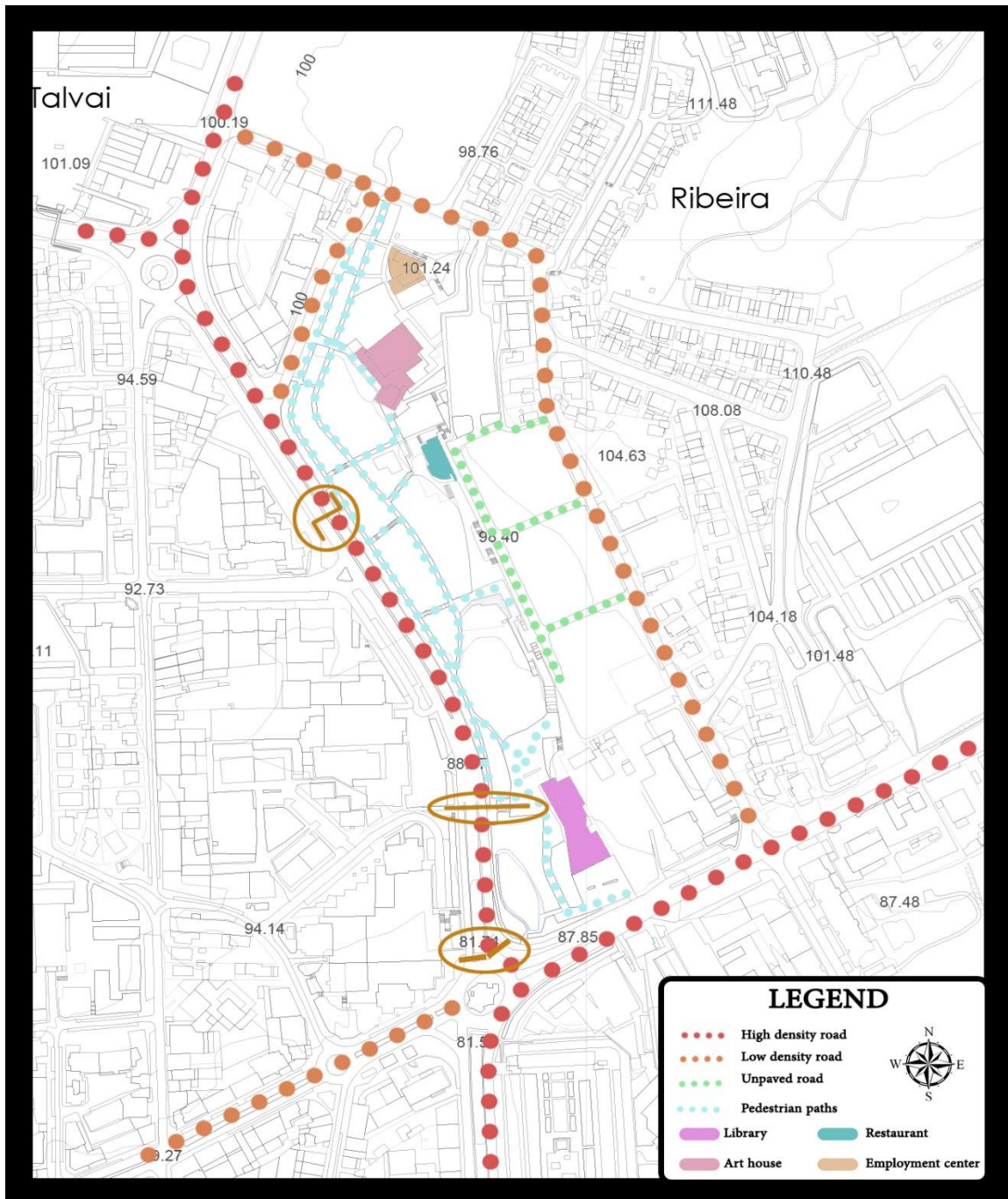


Figure 27: Roads network in the study area. Source: the author

Artes”, “Instituto de emprego e formação profissional” and one restaurant are other facilities that drives people to the space but in noticeable low numbers. In addition, the landscape of the garden provides green plans and pathways but without interesting activities.



Figure 28: “Av. Carlos Bacelar” and the notion of the absence of sidewalk. Source: the author.



Figure 29: Pedestrian Bridge over "Av. Carlos Bacelar"

From our previous study of the subject of accessibility in the theoretical part of this work, we identified a number of factors that should be provided in order to drive people to use the space and making it more walkable. Providing a reason to walk, and make the walk safe, comfortable and interesting are crucial factors in promoting walkability. From the observation of the area, it is possible to say that the whole four factors do not really exist or if they did they are in the minimum amount.

However, some interviews with a total number of 19 people (including workers in the library, art house, and the restaurant) and from an age gradient between (14-69) were done in order to have a deeper assessment and understanding of the accessibility conditions in the area. The majority emphasized that due to the difficulty of reaching the area, and because there is nothing interesting, people don't really come to the area if there is nothing to do in the buildings located inside the garden. Those who lives in the area prefer to drive to the city than walking to it because there is nothing interesting.

In order to assess the walkability of the area as seen by the users of "Parque de Sinçães", we asked them to answer us on a number of questions as organized in Table 5.

Table 5: People responses to a small survey regarding the walkability in the area. Source: The author.

Question	Answer	
	Yes	No
Is there an activity drives you to "Parque de Sinçães"?	6	13
Do you feel Safe when you walk in "Parque de Sinçães"?	15	4
Do you feel comfortable when you walk in "Parque de Sinçães"?	5	14
Do you think that it is an interesting idea to walk in "Parque de Sinçães"?	1	18

From Table 5, we can say that all the factors except for Safety, didn't satisfy the needs of the people in different levels. However, they were asked to explain their answers. In regards to the special activities, 4 thought that the Municipal library may attract them to the area, And each of the restaurant and Arthouse gains one vote.

Regarding the safety, It seems to be that the people are satisfied, the negative answers came from parents who felt that there is no direct danger to them but they fear on their children from the nearby roads. However, when they were asked to answer the same question after adding a small detail, which is the feel of safety at night, the answers were different. Seven people answered positively while twelve declared that they don't feel, or they don't think it is safe to walk at night in "Parque de Sinçães".

Regarding the comfortableness, two main reasons were provided by the participants, the high volume of noise and the lack of benches makes them feel uncomfortable in the area. At last, almost all participants, said it is normal, nothing interesting is here.

A noticeable point in this survey is the participant expression regarding the lack of comfortable caused by the noise of the cars in “Av. Carlos Bacelar”. In our theoretical study of accessibility in the first chapter of this work we talked about the influence of living near highways and crowded roads and the preferable distance from the roads to locate houses. Therefore, a study of this particular issue was needed and we found a detailed study from the municipality of Vila Nova de Famalicão regarding the noise level in the area. See figure 30.

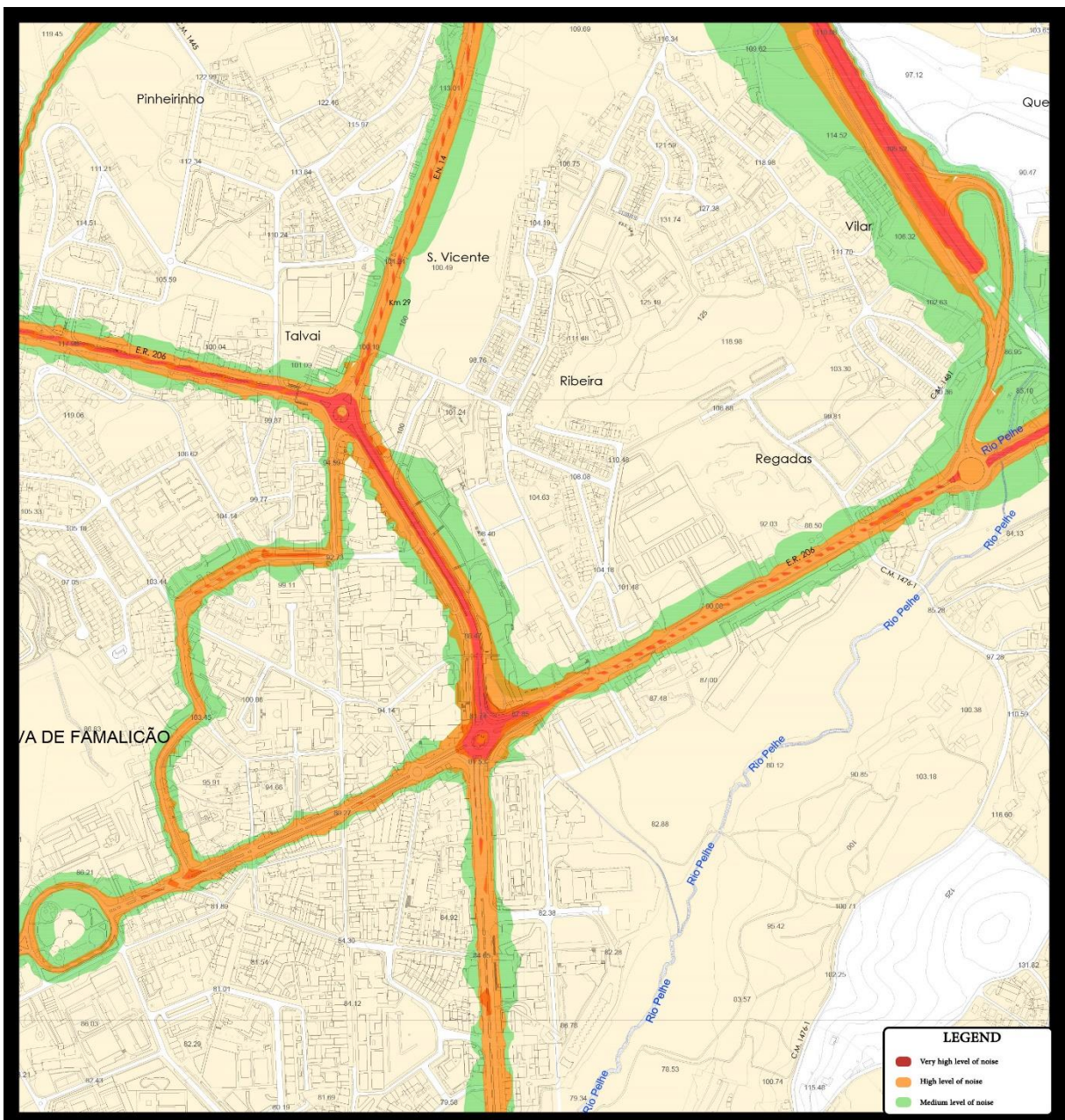


Figure 30: Noise level caused by traffic. Source: Municipality of Vila Nova de Famalicão.

It is noticeable from the noise levels study that the housing location of our study area is not affected by the noise issue. However, on the contrary, the “Parque de Sinçães” is almost completely affected by high and medium levels of noises. This explains the people’s complaints about the lack feel of comfortableness. Therefore, some interventions should be done to deal with this issue in our proposal.

4.3.2. ASSESSMENT OF SAFETY

In the theoretical part of this work we studied the subject of safety and pointed out its crucial role in making a place liveable or not. Later on, during the assessment of accessibility in our case study, we made a survey and the feeling of safety was a part of it. The findings that we concluded from the people was that there is a general feeling of safety in the area during the day but when it comes to night time, the majority of people declared that they don’t feel safe, and another part said that they didn’t use the area during night but they don’t think that it is safe.

To understand the reasons for this feeling of unsafety, a number of analysis will be done starting by a statistical data of the crimes registered in the municipality of Vila Nova de Famalicão and the types of these crimes. In addition, the findings of the field visit to the area.

Starting by analysing the crimes registered in the municipality of Vila Nova de Famalicão in 2014, we notice that they represent 0.007% of the total crimes registered in Portugal with a total number of 2763 crimes. The majority of these crimes are against property with 47,8% of the total crimes in the city while the crimes against people represent 30.6% of the total number of crimes. In addition, 278 crimes against the life in society were committed with 10.1% of the total crimes.

Comparing the percentage of crimes against people between our case study and the whole of Portugal shows the rate of 30.6% in Vila Nova de Famalicão is higher than the rate in Portugal with 23.7%. however, when we calculate the possibility of exposure to crime we find that the possibility in Vila Nova de Famalicão is lower with 0.02% compared to 0.03% in Portugal. See **Table 6**.

Table 6: Crimes registered by police: total and by type of crime. Source: PORDATA

Territories		Type of crime					
		Total	Against People	Against Property	Against life in society	Against the State	Against cultural identity
Geographic Group	Years	2014	2014	2014	2014	2014	2014
NUTS 2013	Portugal	351,311	83,207	192,135	40,234	6,098	21
Municipality	Vila Nova de Famalicão	2,763	845	1,321	278	48	-

(Tulumello 2014) noted that Portugal is considered to be one of the countries with lowest crime rates in Europe. As noted in our study to the crimes in Vila Nova de Famalicão, the same is applied.

This Conflicts with the reality that Portugal also has one of the highest rates of citizens feeling of unsafety. Which we find it in the answers of Vila Nova de Famalicão residents. This issue was explained by (Ferreira 2003) and (Dijk, Kesteren and Smit 2007) as a result of the feeling of insecurity about future and also the reaction of people to a non-direct threats to them like the presence of vandalism or the issues related to drug dealing in public spaces.

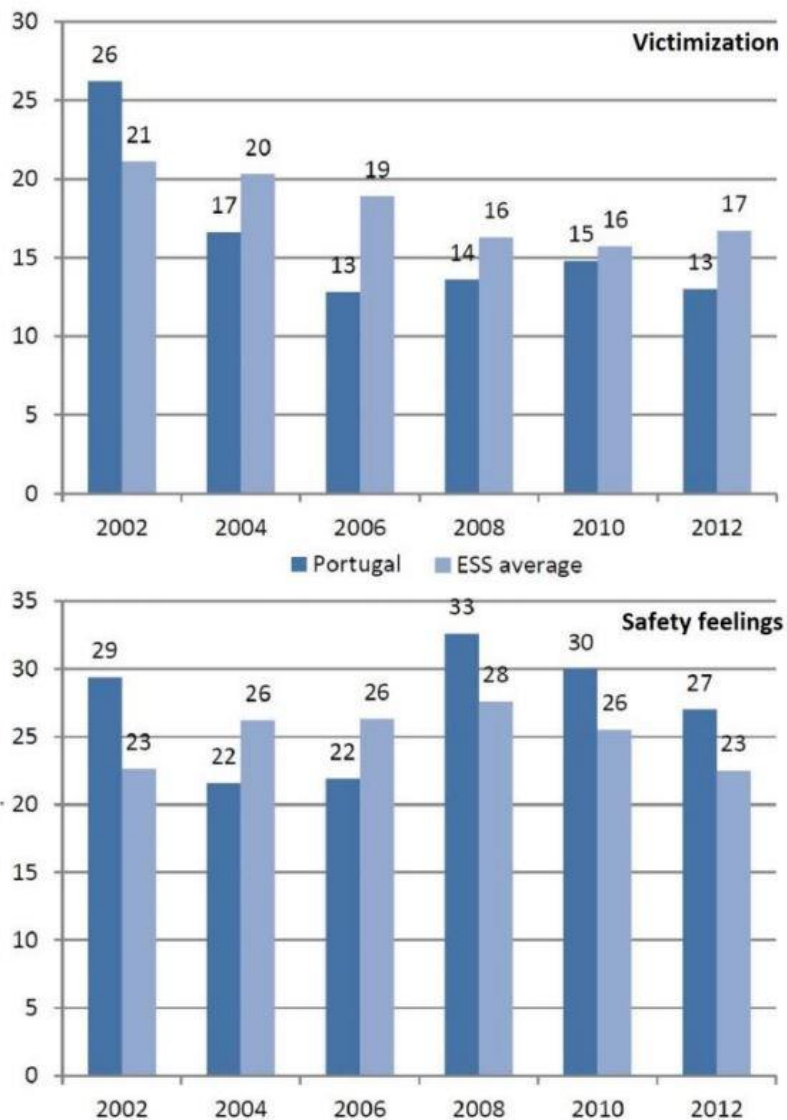


Figure 31: Victimization rates and feelings of safety, Portugal and Europe. Source: (Tulumello 2014)

In the field visit, a question was asked to the people about the reason that makes them feel unsafe in the area at night and the answers were identical. The reason was that the drug dealers and drug users control the area at night.

In addition, an assessment of the factors that may cause the feeling of insecurity –especially at night- in the area was done regarding the physical elements and observing the kind of users.

It is noticeable the absence of any kind of activity in the area during the night. The people’s notion about the drug issue was observed but was limited to few number of young people smoking marijuana and drinking. What is believed to be a crucial factor in the feeling of insecurity is the emptiness of the space and the lack in lighting the area. Only pathways were lighted and not properly as a number of lampposts were not working leaving big dark areas in the place. In addition, no kind of observation from the surrounding buildings over the area was noticed. Also, no kind of warning signs or emergency phones exists in the area.

This assessment leads us to a number of necessary interventions in our proposal to the area which are:

- Adopting a housing typology in order to achieve some observation on the area.
- Creating a number of activities in the area like cafes, restaurants, and night activities.
- Enhancing the lighting of the area and put warning signs and emergency phones in it.

4.3.3. ASSESSMENT OF SUSTAINABILITY

As our study area that is specified for the housing complex development is an empty land there is no possible accurate assessment of it in regards to sustainability except for the “Parque de Sinções”. Generally speaking, the most important threat to the sustainability of the area is being an unwalkble environment promoting heavy dependency on cars. The “Parque de Sinções” adds a good value to the sustainability of the area, but there are a number of interventions that can make it much better.

The energy consumption of electricity in Vila Nova de Famalicão in 2014 represented 1.6% of Portugal’s consumption. This is due to the existence of many factories in the area which is not a great feature of sustainability. However, the people's private consumptions represented 0.6% percent of the total private consumption in Portugal. See

Table 7: Consumption of electricity: total, high voltage, low voltage and private consumption. Source: PORDATA

Electricity consumption				
	Total	High voltage	Low voltage	Private consumption
Years	2014	2014	2014	2014
Portugal	Pro 46,180,709,273	Pro 23,211,460,648	Pro 22,161,004,117	Pro 808,244,508
Famalicão	Pro 804,554,857	Pro 541,260,339	Pro 258,480,041	Pro 4,814,477

However, the general statistic data shows that the municipality of Vila Nova de Famalicão has an expenditure of about 4894 thousand euros on environment. Most of this is on waste management and biodiversity protection. While there are other indicators or sectors of environmental expenditure in Portugal on some cases that represent some problems in our case study such as noise and vibration abatement.

4.3.4. ASSESSMENT OF COMMUNITY INTERACTION:

In order to assess the level of the community interaction in the area, a study of the number of the users of the area and the kind of activities they do was conducted through a number of field visits. This study was done at the same time and the same conditions of the study we made on assessing accessibility. The analysis data provided was conducted by visiting the area for five consecutive days- From Friday till Tuesday- and other shorter visits during the period of realizing this work. All the visits were in normal days with no special occasions and in sunny and moderate weather. The findings of this analysis are organized in the following table.

Table 8: Activities by number of users. Source: The author.

Activity	Time (weekends)				Time (working day)			
	8:00-9:00	12:00-13:00	17:00-18:00	22:00-23:00	8:00-9:00	12:00-13:00	17:00-18:00	22:00-23:00
Pass through	14	18	20	26	36	32	30	21
Walking	-	2	27	-	12	-	23	-
Dog walk	2	10	4	4	3	4	2	1
Running	7	-	-	-	2	-	-	-
Sitting	-	6	7	2	14	6	5	2
bicycling	3	-	-	-	2	-	-	-
skating	-	-	-	3	2	-	3	-
relaxing	-	-	4	-	-	-	2	-
Children playground	-	-	3	-	2	2	1	-
Restaurant	-	10	-	-	-	25	8	-
Smoking weed	-	-	-	7	-	-	-	5
Drinking	-	-	-	3	-	-	-	5
Library	-	-	-	-	-	-	18	-
Arthouse	-	-	-	-	-	8	10	-
Total number of users	26	46	65	55	71	77	102	33

From the previous table, we find that the major use of the area is using it as a passage. The low number of users indicates clearly that the people's interaction with the urban environment is in a bad level. As

in previous steps in this study, we asked the people who were in the area about their opinion regarding the reason. Their answers were that, even though the park has a nice landscaping but of the noise from the cars, the lack of activities, and that there is nothing interesting to do people tend to not use the space. *“If I would like to relax and enjoy nature, I would go to “Parque da Devesa” it is so close, much bigger, and you don’t hear the car’s noise”*. Said one of the people I asked.

The lack of activities is obvious, however, it seems that the Municipal library and the restaurant in the area drive a good percentage of the people using the space. From the observations on the park, it was obvious that its design affects this aspect negatively.

According to (F. B. Alves 2003), the public space should provide a variety of activities ranging from spaces for recreation, leisure, and living, recreational spaces for younger people, cultural and recreational activities. These services are clearly don’t exist in our case study nor in the surrounding areas. Therefore, we must locate a good number of activities in the area which are directed to all types of people.

4.4. SOCIO-ECONOMIC CHARACTERIZATION

4.4.1. POPULATION

The population of Vila Nova de Famalicão is compared to the overall population of Portugal is characterized as being more active. The dominant age group over the population structure is the active age group between 15 and 64 years old. This notion was obvious during our field visit to the study area where we noticed that the vast majority of the users of the area are characterized as being adults. The elderly population represents 13% of the resident population of Vila Nova de Famalicão which makes the number of active aged people per aged people reach the ratio of 5.1. This is pretty over the average in Portugal which is 3.5. Females represent 51.9 % of the population and 48.1% males.

However, looking deeply to the statistical data of the population and its changing rates we find that the number of residents of Nova de Famalicão didn’t change significantly during 10 years where it only 6265 new residents between 2001 and 2011 and after that it started to drop where in 2015 the population decreased by almost 1000 residents compared to 2011. This is due to the low annual growth rate and migration. Another notion is, there was an increase in the number of residents of both the active age group and the aged group while on the contrary, the young population group has been suffering from an increase in the number of residents in Vila Nova de Famalicão. This gives us a very important notion to take into consideration in our design which is that there will be a big increase in the number of aged

population in Vila Nova de Famalicão. Therefore, we should put in mind that our proposal design should adopt the idea of creating an age-friendly environment and promotes the concepts of active aging.

Table 9: Resident population, according to Census: total and by major age groups. Source: PORDATA

Major age groups								
	Tot		0-14		15-64		65+	
Years	2001	2011	2001	2011	2001	2011	2001	2011
Portugal	10,356,117	10,562,178	1,656,602	1,572,329	7,006,022	6,979,785	1,693,493	2,010,064
Famalicão	127,567	133,832	23,971	21,617	90,061	93,771	13,535	18,444

Table 10: Resident population: total and by sex. Source: PORDATA

Sex									
	Total			Males			Females		
Years	2001	2011	2015	2001	2011	2015	2001	2011	2015
Portugal	10,362,722	10,557,560	10,358,076	5,002,916	5,041,990	4,912,588	5,359,806	5,515,570	5,445,489
Famalicão	127,879	134,054	133,153	62,639	64,961	64,001	65,240	69,093	69,152

Table 11: Number of people of active age per aged person, according to the Census. Source: PORDATA

Territories		Potential sustainability index			
Geographic Group	Years	1960	1981	2001	2011
NUTS 2013	Portugal	7.9	5.5	4.1	3.5
Municipality	Famalicão	10.6	8.8	6.7	5.1

4.4.2. LOCAL AND REGIONAL ECONOMY

Vila Nova de Famalicão is known as an industrial city, mainly, textile industry. It is noticeable that there is a relevance to population employed in the secondary sector, however, it has the tendency to decrease. Associated with it, the primary sector also an evolution to give less impact on the economy. Therefore, the tertiary sector, which includes all commerce and business services are more and more important on this territory. A factor that is close related to these events is the increase of education levels. Also, this has a direct consequence on the exigency for better quality standards and of habitation.

The noticeable thing is that in spite of the increasing number of jobs offers, the unemployment rates were also increasing though the population is stable and decreasing. However, the activity rate in Vila Nova de Famalicão compared to the average rate in Portugal shows higher values.

These findings gave us some indicators about the targeted group for the new residential complex and the kind of activities we should provide in “Parque de Sinções”.

Table 12: Job offers (yearly average) available at the public employment office: total and by sector of economic activity. Source: PORDATA

Territories		Sector of economic activity							
		Total		Primary		Secondary		Tertiary	
Geographic Group	Years	2010	2014	2010	2014	2010	2014	2010	2014
Municipality	Famalicão	166.7	322.8	0.8	1.8	88.1	189.3	77.7	131.8

Table 13: Activity rate, according to the Census: total and by age group (%). Source: PORDATA

Years	⊥ 2001	⊥ 2011	⊥ 2001
Portugal	⊥ 57.4	⊥ 55.9	⊥ 49.4
Famalicão	⊥ 65.2	⊥ 61.1	⊥ 56.1

Table 14: Unemployment rate, according to the Census: total and by age group (%). Source: PORDATA

Territories		Age groups	
		Total	
Geographic Group	Years	⊥ 2001	⊥ 2011
NUTS 2013	Portugal	⊥ 6.8	⊥ 13.2
Municipality	Vila Nova de Famalicão	⊥ 5.2	⊥ 14.9

Table 15: Employment, according to the Census: total and by sector of economic activity

Territories		Sectors of economic activity							
		Total		Primary		Secondary		Tertiary	
Geographic Group	Years	± 2001	2011	± 2001	2011	± 2001	2011	± 2001	2011
NUTS 2013	Portugal	±		±		±		±	
		4,650,947	4,361,187	231,646	133,386	1,632,638	1,154,709	2,786,663	3,073,092
Municipality	Famalicão	±		±		±		±	
		64,043	58,368	953	654	40,545	29,062	22,545	28,652

4.5. COMPARATIVE STUDY

During the field visit to the site, it was noticeable the low volume of the usage of the “Parque de Sinçães” in spite of its location near the city center and big size. On the other hand, we noticed a very high volume of use in “Jardim Dona Maria II” which is only 10 minutes walk from the “Parque de Sinçães” in spite of its small size which is almost 15% of the size of “Parque de Sinçães”. To understand the reasons for this issue and in order to make “Parque de Sinçães” which is a part of our study area more liveable a comparative study to the number of users were done along with interviews with the users in both spaces.

The study was conducted during five consecutive days- From Friday till Tuesday- and other shorter visits during the period of realizing this work. All the visits were in normal days with no special occasions and in sunny and moderate weather. The counting was made in four main periods of the day (Morning, Noon, Afternoon, and Night). The data will be presented in tables and separate the data of working days from the weekends.

The findings of this count regarding “Parque de Sinçães” were provided in Table 8, during the community interaction evaluation in this work. Here the same count regarding “Jardim Dona Maria II” will be provided along with the opinions of the users in both spaces. In addition, I will provide my own notes and explanations regarding this issue depending on personal observation and assessment. The objective of this study is setting a number of interventions to be provided in the proposal design of the area.

Starting with the comparative analysis of the number of users, we found a very big difference taking into consideration the sizes of both spaces and their possible capacity. See Table 16.

Table 16: Activities by a number of users "Jardim Dona Maria II". Source: The author.

Activity	Time (weekends)				Time (working day)			
	8:00- 9:00	12:00- 13:00	17:00- 18:00	22:00- 23:00	8:00- 9:00	12:00- 13:00	17:00- 18:00	22:00- 23:00
Pass through	32	48	63	39	48	51	54	29
Walking	5	5	9	-	1	7	3	-
Dog walk	6	12	5	-	1	2	2	1
Running	-	-	-	-	-	-	-	-
Sitting	8	21	32	14	5	27	21	11
bicycling	-	-	-	-	-	-	-	-
skating	-	-	-	-	-	-	-	-
relaxing	-	9	7	-	-	6	2	-
Children playground	-	8	10	2	-	5	6	2
Smoking weed	-	-	-	-	-	-	-	-
Drinking	-	-	-	6	-	-	2	4
Restaurant (Eating)	-	7	4	-	-	10	6	-
Total number of users	51	110	130	61	55	108	96	47

From the data shown in Table 8 and Table 16, the difference in the volume of users is big taking into consideration the difference in size between the two spaces. The average number of users of “Jardim Dona Maria II” per hour in a weekend day is 88 while in “Parque de Sinçães” it is 48. In work days “Jardim Dona Maria II” had an average of 76 users per hour while “Parque de Sinçães” had an average of 70 users per hour.

It is true that the difference during the work days is not that much but taking into consideration the size of both gardens makes it feel as a big difference. Especially that we considered the users of the municipal library and Arthouse located in “Parque de Sinçães” as users of the park itself due to the fact that those services are located inside the park. On the other hand, we didn’t count the users of the activities near “Jardim Dona Maria II” as they are located near it, not inside it.

An important notion was that there are a number of activities that people do in “Parque de Sinçães” but they don’t do in “Jardim Dona Maria II” such as, running, bicycling, skating, and drug dealing. On the other hand, the activities of Sitting, relaxing, walking, and playing in the playground are much greater in “Jardim Dona Maria II”.

Hence we should say that the absence of running, cycling, and skating activities in “Jardim Dona Maria II” is not caused by a defect or failure in the garden, but because that its size doesn’t allow such kind of activities. Hence, we should notice that the size of “Parque de Sinçães” is a strength point we should use in our proposal design.

On the other hand, the low average of Sitting, relaxing, walking, and playing in the playground in “Parque de Sinçães” is caused by a defect or a failure in it. The park is designed and equipped to provide these activities but the people don’t use them.

From observing the physical, elements and the surrounding environment of both spaces, I found some explanation of these issues.

Firstly, regarding the physical elements, “Jardim Dona Maria II” provide better equipment like the materials used in pavements, the design, direction and materials of benches, the lampposts, and playground equipment. These factors play a role in attracting people to use this environment. However, the effect of the surrounding environment is higher. The garden is located in a pedestrian environment. Cars are not allowed on the main street leading to the garden. In addition, there is no kind of barrier that disconnects the garden from the city center as we have in “Parque de Sinçães”. Also, the surrounding environment of the garden is full of commercial activities like shopping, cafes, restaurants... etc. This makes the area more attractive for users.

The answers of the users that were asked to explain the variation of the usage between both spaces emphasized on the finding we provided. The reasons were as mentioned in the study of the community interaction in the study area. “Parque de Sinçães” has nothing interesting to attract people, harder to be reached, and too noisy.



Figure 32: Comparative photos of the both spaces at the same time and day. Upper Photos are for "Jardim Dona Maria II"



Figure 33: Comparative photos of the both spaces at the same time and day. Upper Photos are for "Jardim Dona Maria II"

5

PROPOSAL FOR THE STUDY AREA

5.1. PREFACE

In this chapter, an urban design proposal for the study area is provided. Based on the findings of both the theoretical part of this work and the analysis of the case study area.

The proposal presents a housing typology for the development area that promoted the four main factors studied in this work which are (Accessibility, Safety, Sustainability, and Community interaction).

In addition, a number of interventions on the “Parque de Sinçães” have been made in order to make the whole area more liveable.

The proposal will be presented in a form of figures contains a number of plans and 3d images of the proposal. In addition, a brief written analysis will be added in order to provide a better explanation of the design qualities.

Regarding the interventions on “Parque de Sinçães”, a number of figures represent some ideas to be included in the proposal will be added.

5.2. PROPOSAL STUDY

The proposed design for this project considered different aspects, mainly four aspects; accessibility, sustainability, security and community.

5.2.1. DESIGN FOR ACCESSIBILITY

In this aspect, the design has many proposals;

1. In the land prepared for the project, three main paths divided the land into three main spaces, this segregation was considered in the proposal by designing the masses into three residential blocks to create diversity in the visual perspective of the project, unlike the design of one residential block which could create heavy impact on the resident, the land and the environment.
2. Extending the three paths inside the “Parque de Sincaes” as pedestrian paths crossing the garden to create visual and physical extension and length to the residential masses, therefore it increases the connection between the masses and the garden, also to ease the movement of the pedestrian inside the garden and between the study area and the center of the city.
3. The extension of the “Av. Carlos Bacelar” street on the south-west of Parque de Sincaes would be replaced with underground vehicles tunnel, which will help facilitate the access of the vehicles movement, on the same time the existed road will be substituted with green spaces creating a visual and physical connection between the residential masses in the project and the services in the center of the city, thereby the residents could have safe passage towards the city center without having to cross any roads.
4. Designing the street separating the residential masses from the garden into ‘home zone’ street; which is a living street used to enable pedestrian, cyclist and residence to use the street safely by limiting the domination of the vehicles in this kind of street, this idea could be designed by removing the barriers between the pedestrian and the road, also establishing traffic calming elements and make sure it’s well eliminated at night to ensure the safety of the user of the street, and lastly to design are for children to play to encourage the social interaction of the residence of the project while using the street, (Center 2004). This design would help connect the residence of the project with outside user of the garden when it’s clear that the connection between the two is clear and exposed.
5. The project ensure all the facilities designed are barrier-free environment with full accessibility for disables individuals, most of the public services have all the proper tools to make sure everyone could use it, with the insulation of access standers under the European regulations.

6. The ground floor of each residential block will be used as commercial and cultural center to help the residents having easy services and reach any need safely, the area will be rented to the residents them self where they could establish local work providers, also in some cases it could be given to private sectors to ensure all the needs of the residents.
7. Regarding the garden, the paths will be wider and shaded with trees and other urban furniture to ensure the comfort for all the users. Many activities will be added as attraction points for people in order to walk more and interact with the space

5.2.2. DESIGN FOR SAFETY

In the area of the project, many residents complained about the lack of security in the area. Causing the diminishing of amount of inhabitation using the facilities excited, in order to increase the safety factor in the new design several procedures have been taken under consideration:

1. Increase the visual ambit in the street by decreasing the barriers on the sides of the roads which create open wider street to prevent any miss usage of those sides, also it boosts the feeling of security for the residence when they could paths through wide clear streets.
2. Enhance the local observation of residence to the activates created in the ‘home zone‘ area and in the garden to create the atmosphere of being surrounded by people in the public spaces, and that is done by designing the balconies that overlook the streets and the garden where the many residents could spend quality time practicing many activates, on the same time any unintentional accident could be observed and prevented immediately. The design of the balconies as small gardening area came as a response to local observation in addition to sustainability needs. However, the main idea was to let people use these balconies. It is obvious that Portuguese people don’t have the culture of using balconies more often. Therefore, we needed to do something that attracts people to use them, and as the majority of the people are elderlies and the gardening is a favorable activity for elderly people, I believe that this way they will use the balconies more often
3. The accessibility of the street connecting the residential masses with the other neighborhood could be controlled when needed because the main street overlooks the mass is Rua Barão de Joane, and the entrance and the exit of the project are only open on the northern southern axes of the residential masses, and with one-way vehicles road in front of the residential masses

which is considered 'home zone' street, the entrance toward the project using vehicles is well controlled by the traffic calming elements.

4. Ensuring that all the streets and paths are well illuminated in the night, to increase the safety of the pedestrian movement from and towards the project, including well-designed public spaces in the garden to make night activities to increase the connection between the residences of the area, on the same time ensure safer movement of the residence and visitors.
5. The ground floor in the design is used for various uses including commercial and cultural, to help increase the movement in the project, and to hold many cultural activities accompanied with the public spaces in the garden like the outdoor theater, and this usage could secure the entrance of each residential block for the inhabitants by having continuous commercial movement in the ground area of each block.

5.2.3. DESIGN FOR COMMUNITY

To increase the inclusion of the resident with the activities, many sides to support the community aspect have been under considerations in the design process including:

1. The project considers the human scale in the elements of the buildings to ensure proper standards of design to accommodate the specific humanitarian functions and activities, where it's known that the human scales in design gives in the design of the residential blocks all the diminution of the buildings were made to consider the needs of disables by creating all the possible facilities for easy movement and services.
2. The increase in the facilities allowing the outdoor activities in the proposed project could help in enriching the connection between the residents of the area, by easing the possibility of local gathering event using the 'home zone' street and the proposed facilities in the garden like the outdoor theater and exposed sculptures art gallery, it would create better chances for the residents to meet and exchange information, also it would be an attraction point for outer inhabitation to visit the area and engage in the activities, which have many effects for the inhabitants including the increase in the commercial demand for the various commercial and cultural services that could be offered on the ground floor of the residential blocks, on the other hand the increase in the pedestrian movement in the area would raise the safety factor for the residents and by that would increase the life quality of the inhabitation.

3. The diversity in the usage of the ground floor including commercial and cultural usage increase the services that could be offered, creating higher satisfaction from the inhabitation towards the proposed project, and that would help to have more close connections between the residents themselves and the outer visitors. Also, this diversity would help the residents to create their own activities and labor opportunity by presenting easier procedures towards the activities suggested by the residents themselves.
4. Creating a level of connection inside the residential buildings by creating a passage connecting the three residential masses in a level of movement to ease the transportation of the residents and visitors through this level without having to cross the entrance of each block, which will help the social connection and unity of the residents in the project.

5.2.4. DESIGN FOR SUSTAINABILITY

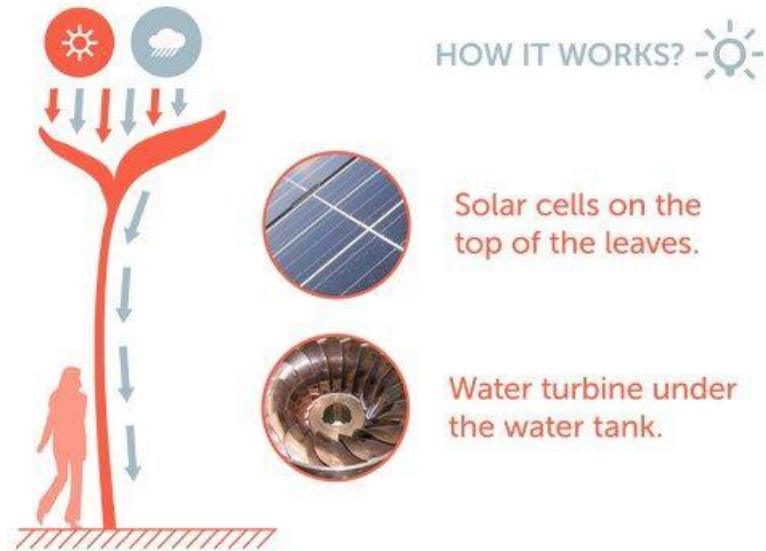
The main aspect of this proposed project, in order to ensure sustainable sources for future generation, the following aspects have been considered in the design:

1. The usage of local building materials to reduce the cost and effect of transferring the materials from different location into the area of the project, also to make sure the project fits well with the surrounding environment in Vila Nova, relating to that the materials used were mainly the Portuguese natural stone work with establishing the structure of the buildings using local produced cement and bricks, including the materials used in the proposed activities in the garden like the outdoor theater and the exposed sculptures art gallery.
2. Designing the interiors spaces inside the residential blocks to present the best indoor air quality by studying the isolation applied in the buildings, whether its heat or liquid isolation to ensure the best environment inside, also a study of the sun movement in the area was applied to make sure that the openings in the building present consistence but not direct light into the living areas in the buildings to help the residents gain the best usage of the natural light and heat without having to use much of the artificial lighting and heating inside the buildings.
3. Creating livable gardens on the roof of the residential building which can be used by each residents to plant their special house garden at the same time to use the different levels of the design to create more green spaces to be used, not to mention the increase in the CO₂ sequences when increasing the vegetation cover in the area, last but not least

the isolation effect of the vegetation cover over the top floor of the building which will help in a country with the average to hot weather like Portugal to reduce the warming that happens usually in the final buildings layer.

4. Increase the CO₂ sequences by extending the garden over the excited rode off the extension of the “Av. Carlos Bacelar” Street which will increase the amount of CO₂ observed from the plants raised in this area.
5. Reduce the CO₂ released from the vehicles passing by the extension of the Av. 9 de Julio street by turning it into underground tunnel, which could change the way and the amount of the CO₂ released by those vehicles, also in addition to that by limiting the vehicle's movement in the street in front of the residential blocks the amount of CO₂ released into the atmosphere would be less than present situation, and by surrounding the vehicles road with well-chosen vegetation cover it could limit the amount of CO₂ released toward the inhabitants area near the residential area and the commercial and cultural area on the ground floor.
6. Installation of rainwater collecting system in different areas in the project, in the land of the garden and near the residential blocks which transfer the water into underground water storage, which could be connected to the houses of the residents to be used in kitchen and toilets, on the other hand a gray water retreating system would be installed on the scale of each residential block so later can be used to watering the vegetation cover.
7. Solar cells will be installed on the roof of each building to collect energy from the solar natural source which could be used to enlighten the entrance of each building, because with the area used as a roof garden, only limited space available to install the solar collecting boards.
8. Directing the buildings and designing their geometry in a way that allows the maximum use of solar power and natural light, which in turn has a big effect on the energy usage and sustainability of the area.
9. All the enlightening equipment used in the outdoor spaces is used depending on the new designs which have solar cells to collect the energy needed for lightening the areas in the night, at the same time is supported with the equipment to collect rain water which could be used to water the plants in the areas around the lights.

For example, the design proposed by Adam Mikloski, which get the inspiration for it from the mango leaves. (Miklosi 2012).



5.3. PROPOSAL DESIGN

The Proposed design of the housing complex consists of 3 buildings taking the shape of the letter (U) and the shape of a square in order to achieve the shell planning concept. The design was based on the idea of the opening towards “Parque de Sinçães” as a nice view and to achieve the needed observation over the garden.

In this matter, the housing typologies of the buildings depend on the sequential declines directed toward the garden and in a manner permitted us to achieve the maximum benefit from the sun's natural lighting.

The accessibility issues were important in designing the buildings. The street life concept was adopted and the ground floor plan was dedicated to host as many commercial and entertaining services as possible. The street that separates the houses location from the “Parque de Sinçães” was planned as a pedestrian street only in order to connect the housing area with the park. In addition, the ground floor plan provides access to through buildings mass between the near street and the garden making without making the housing complex closed and isolated.

The internal spaces in the buildings are equipped with children play grounds and a comfortable sitting areas for the parents with a water body with high level of observation from the houses in the building which promotes a sense of safety.

Also, a big number of interventions were applied on the garden as explained earlier promoting a high level of accessibility with the city center and solving the issue of high volume of traffic in the surrounding streets.

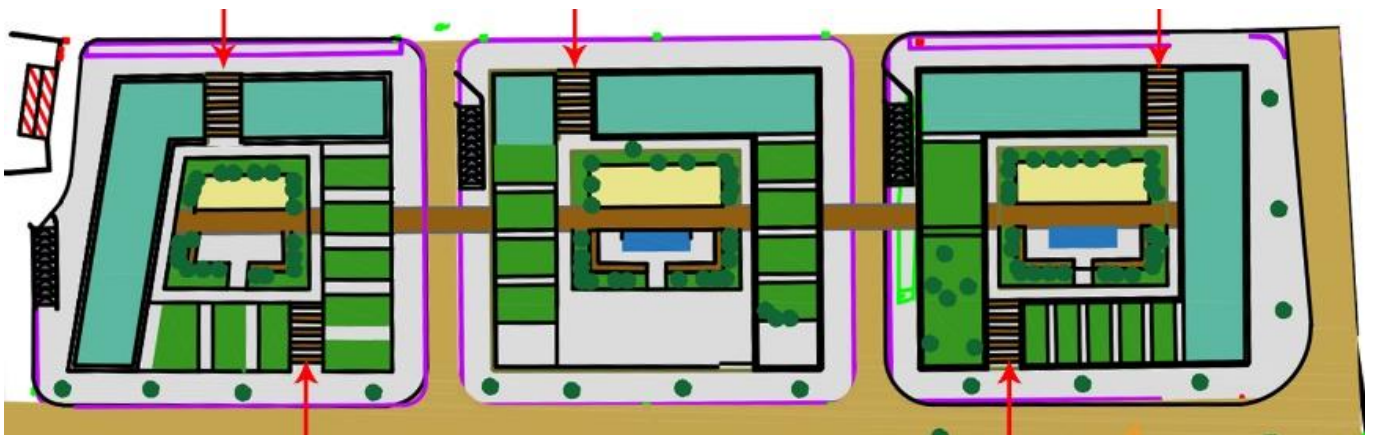


Figure 34: Housing Complex general plan. Source: The author.



Figure 35: General site plan. Source: the author.



Figure 36: Perspective of the housing complex. Source: The author.



Figure 37: Perspective of the housing complex.



Figure 38: Perspective of the housing Complex.



Figure 39: Elevation of the housing complex.

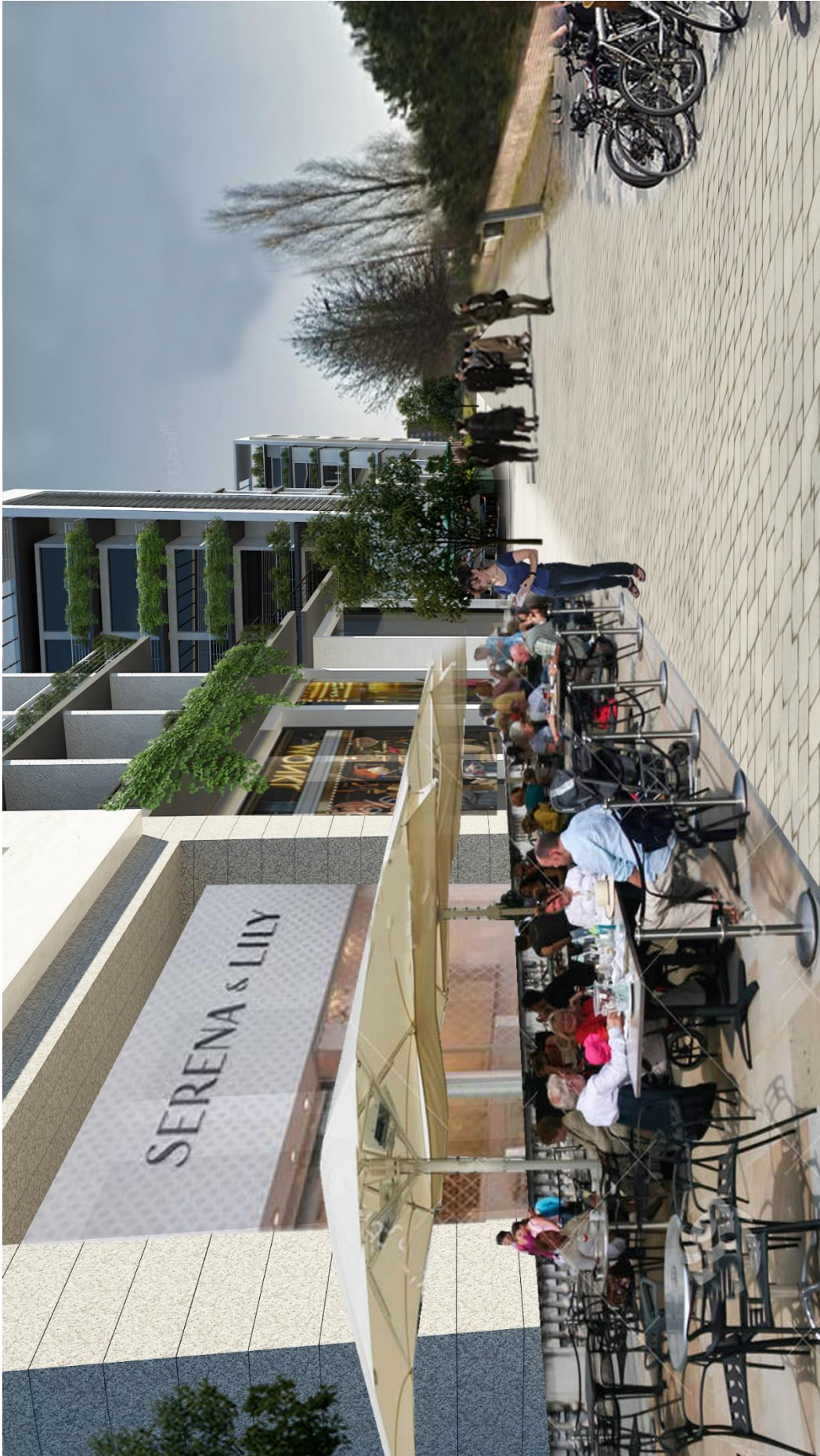


Figure 40: The street life concept and linking housing complex to the Park through it.



Figure 4-1: the inner space of the buildings.

Here are some pictures of the proposed interventions in the “Parque de Sinções”.













6

CONCLUSION

6.1. MAIN CONCLUSION

In this research, the concepts of liveability, along with housing typologies, have been addressed through four main chosen characteristics of the urban environment.

The main aim of this study was to reach a design proposal for enhancing the liveability of the studied area in "Vila Nova de Famalicão". For this purpose, a thorough analysis of this area was conducted, taking into consideration the aspects of housing typologies that comply with the four studied principals of liveability. This analysis was divided into three parts.

Firstly, the physical elements and the plans of the urban environment of the case study were analysed by carrying out a number of field trips to the site. During these field trips, the level of adherence to the studied qualities of liveability in the site was examined and assessed.

Secondly, factors related to the socioeconomic background of the population residing in "Vila Nova de Famalicão" were analysed to determine the age distribution and economic structure of this population.

Thirdly, a comparative analysis between a park in the location of study "Parque de sinçães" and a highly popular garden in the same area "Jardim de D. Maria II" was carried out. The purpose of this comparison was to locate the strength points in "Jardim de D. Maria II" and the weaknesses in "Parque de sinçães" from the viewpoint of liveability. The results of this comparison were then taken into consideration to define the factors that attract the residents of "Vila Nova de Famalicão" to the park.

The combined results of this three-part investigation have led to a design proposal that is thought to fulfil the four primary qualities of liveability addressed in this study.

Regarding Liveability:

Achieving the theoretical standards of liveability, as reflected in literature, seems to be an endeavour of attaining perfectionism from the viewpoint of urban planners.

The vast number of underlying notions and interrelated socioeconomic, materialistic, environmental and cultural factors contributing to the concept of liveability surely adds to its complexity. However, the current study made an attempt at considering its objective and subjective perspectives alike.

Although this research was more inclined to focus on the physical design aspects of the urban environment, and particularly housing typologies, social factors were certainly not overlooked. In fact, socioeconomic factors were thoroughly analysed and played an influential role in the drafting of the final proposal.

It is understandable that creating a liveable urban environment for all individuals in one society is not feasible. People differ as well as their attitudes and opinions, and a liveable environment for one might not be as such to another. To overcome this dilemma, particular factors reflecting common problems for the vast majority of users in our case study were considered, in addition to others relating to urban environments; namely, accessibility, safety, sustainability, and community interaction.

A separate analysis was performed for each of the above-mentioned factors in the first chapter of this study, along with a discussion of the general urban debates relating to each of them individually. Their relations to the concept of liveability and ways to employ them in an urban environment to increase its liveability were also investigated.

As a result of this investigation, a number of important findings to be considered and implemented in the final urban proposal, which is the main purpose of this work, were attained. Those findings basically represent certain qualities concerning the concept of liveability which can adequately assess the level of this liveability in the urban project to be designed. These qualities were further categorised according to the studied factors in this research as follows:

Qualities pertaining to "Accessibility":

- Alleviating or converting traffic pressure so that it would not contradict or adversely affect the walkability or the atmosphere of the environment.
- Promoting walkability
- Activating safe, enjoyable and comfortable pedestrian paths.
- Connecting the area with its surroundings and adopting the compact planning policy.

Qualities pertaining to "Safety":

- Adopting the Crime Prevention through Environmental Design (CPTED) strategies.
- Conducting local Surveillance.
- Controlling access without creating closed environments or gated communities.
- Enhancing the built environment to promote a sense of safety by improving or adding physical elements that are considered essential for safety like lighting, signs, emergency phones, etc.
- Encouraging people to use the spaces by providing a variety of activities.

Qualities pertaining to "Sustainability":

- Green design strategies
- Best use of sunlight and absorbing water.
- Preservation of nature.
- Compact development.

Qualities pertaining to "Community":

- Mixed used buildings.
- Street life.
- Human scale.
- Transportation.

Regarding Housing Typologies:

The second chapter of this study aimed to explore housing typologies and its connection to liveability. More importantly, the way of accomplishing liveability, defined by the four factors considered in this study, through housing typologies.

Housing typologies were found to be far more significant than a form or a shape of a residential building or a complex of buildings. In fact, housing typologies mutually affect the urban environment and are a primary component of it. The social, economic, cultural, environmental, and historical characteristics of a place are strongly associated with housing typologies.

When it comes to liveability, housing is considered to be the cornerstone of any urban community. A well-planned housing means that its inhabitants will get to live in a decent urban environment. The housing typology can either increase or decrease the quality of all components of the urban environment, and the contrary is also true.

In order to create a suitable housing typology, a deep analysis of the characteristics of the area is supposed to be done. Besides, it is fundamental to know how could the new housing typology help improve the quality of life in this area and solve the problems affecting its liveability.

In regards to the main aspects of this study (Accessibility, Safety, Sustainability, and Community), Housing typologies can play a vital role in promoting each of them.

After exploring the interconnecting relationship between housing typologies and the main characteristics of the urban environments addressed in this chapter, the principal intervention steps to enhance liveability in the housing typologies can be summarised as follows:

Measures related to "Accessibility":

- Flexible ground plans that don't make the building as a barrier in the urban environment.
- Multi uses activities on the ground floor in order to create interesting and attractive activities to drive people to the area.
- Linking the buildings with the surrounding environment and not making them closed or isolated.
- Using the land for other purposes than car parking, and make an underground parking to serve the needs of residents.

Measures related to "Safety":

- Opening buildings to the surrounding environment.
- Respecting the human scale and not building too high buildings.
- Directing the buildings in order to achieve local surveillance over the surrounding environment.
- Choosing proper finishing materials that can resist vandalism.
- Adopting the strategy of moving from the public to private.

Measures related to "Sustainability":

- Preserving the natural environment in the site as the most important measure.
- Using sustainable materials.
- Directing the building in order to get the best possible use of the natural sunlight.
- Preserving of energy by developing a smart concept of housing where usage of electrical energy and water is reduced.

Measures related to "Community":

- The building should provide meeting areas, like yards for example, to encourage the residents to get to know each other.
- Multi uses ground floor.
- Human scale.
- Street life.

Regarding the case study and proposal:

Deep analyses of the case study have been handled objectively and subjectively. The observations from the field visits, the studies on the plans, interviews with the users, and statistical counting were done in order to collect our data. The collected data showed a number of problems that exists in the area which in turn enforced us to define a number of necessary steps and interventions in the area. It was not surprising that the majority of these steps are identical to the findings and recommendation of the theoretical study.

I was able to reach an urban proposal that solves the majority of these problems and promotes liveability, mainly, through housing typologies. However, Some interventions on the other elements of “Parque de Sinções” were needed. By reaching this proposal, I fundamentally achieved the purpose of this study. As a final finding from the proposal, we can emphasize that housing typologies may be an effective tool in achieving liveability in urban areas. This is new and unique method to enhance the liveability of urban communities and it is an economic way too.

6.2. FUTURE STUDIES

The number of studies regarding the concepts of liveability and housing typologies in the urban planning literature is high. However, the majority of these studies deals with each concept separately. On the other hand, the number of studies that combines the both concepts and analyse the mutual relationship between them is low.

Most of the studies on the methodologies of achieving liveability focus on increasing the quality of the housing environment by increasing the quality of its elements but not housing. While most of the studies on housing typologies focus on the building itself without paying much attention to the surrounding environment.

The findings of the theoretical part of this work emphasized the importance of the relationship between livability and housing typologies, and provided a number of possible ways to promote liveability through housing typologies by solving the problems related to the main four factors studied. This research spotted the light on this alternative way to achieve liveability in urban environments and the practical proposal showed that it is an effective way. Further studies regarding the role of housing typologies in

solving the problems that exist in urban communities and threaten the liveability of them may be based on this work.

In this research, we studied four main factors (Accessibility, Safety, Community interaction and Sustainability). Further studies on other factors may be done till we reach a general framework of aspects that when they are implemented in the design of the residential typologies may directly increase the level of liveability. On the long term, this subject may be an effective tool in planning cities around our homes instead of planning our homes around cities debate .

BIBLIOGRAPHY

- Abdin, Yassar. 2010. "Mass violence against the city." *Thought (Arabic)* 82-85.
- Abdul Mohit, Mohammad, e Sule Iyanda. 2015. "City Liveability and Housing in Nigeria: A Case Study of Low-income Housing in Niger State." *Procedia - Social and Behavioral Sciences* (Published by Elsevier Ltd.) 02.
- Abrantes, Nuno, Fernando Brandão Alves, e Vítor Abrantes. 2014. "The city of Porto and the public housing: Learning With design practice." *40th IAHS Congress - Sustainable Housing Construction*. Funchal.
- Alves, Fernando Brandão. 2003. *Avaliação da Qualidade do Espaço Público Urbano. Proposta Metodológica*. Lisbon: Ed. FCT / FCG.
- Alves, Sonia, e Ricardo Veludo. 2014. "The Importance of Housing in Portugal in the Age of Austerity." *The Welfare State in Portugal in the Age of Austerity - Lissabon, Portugal*, September.
- Andresen, Martin, Paul Brantingham, e Bryan Kinney. 2010. *Classics in Environmental Criminology*. Burnaby, Canada: Simon Frazer University press & CRC press.
- Araabi, Hooman Foroughmand. 2016. "A typology of Urban Design theories and its application to the shared body of knowledge." *URBAN DESIGN International* 21 (1): 11-24.
- Bateman, Ian, Brett Day, Iain Lake, e Andrew Lovett. 2001. *The Effect of Road Traffic Noise on Residential Property Values: A Literature Review and Hedonic Pricing Study*. Edinburgh: The Scottish Executive Development Department.
- Branco, Rosa, e Sonia Alves. 2015. "AFFORDABLE HOUSING AND URBAN REGENERATION IN PORTUGAL: A TROUBLED TRYST?" *European Network for Housing Research*. Lisbon: ISCTE-IUL.
- Brownell, Matthew . 2007. *Redeveloping Modern Housing Sites, Improving the Livability of the Ground Plane*. Cambridge: Massachusetts Institute of Technology.
- Butlin, John. 1987. "Our common future." *World commission on environment and development*. London: Oxford University Press. 383.
- Cambra, Paulo. 2012. *Pedestrian Accessibility and Attractiveness. Indicators for Walkability Assessment*. Master dissertation, Lisbon: Instituto Superior Técnico, Lisbon University.
- Carmona, Mathew, Steven Tiesdell, Tim Heath, e Tanner Oc. 2003. *Public Places - Urban Spaces: The Dimensions of Urban Design*. Oxford: Architectural Press.
- Center, Alan M. Voorhees Transportation. 2004. *Home Zone Concepts and New Jersey*. New Jersey.
- Chaffer, Lorraine. 2015. "Place and Liveability." *AGTA Conference*. New Zealand.
- Cozens, Paul, e Terence Love. 2015. "A Review and Current Status of Crime Prevention through Environmental Design (CPTED)." *Journal of Planning Literature* 30 (4): 393-412.

- Cruz, Sara Santos, e Paulo Pinho. 2009. "Closed Condominiums as Urban Fragments of the Contemporary City." *European Planning Studies* 17 (11): 1685-1710.
- Day, Jennifer. 2013. "Effects of Involuntary Residential Relocation on Household Satisfaction in Shanghai, China." *Urban Policy and Research* 31(1): 93-117.
- Demiene, William. 1957. *An Urban Living Environment*. Master dissertation, Cambridge: Massachusetts Institute of technology.
- Dijk, Jan van , John Van Kesteren, e Paul Smit. 2007. *Criminal Victimization in International Perspective. Key findings from the 2004-2005 ICVS and EU ICS*. The Hague: Boom Legal Publishers.
- Eliasson, Jonas, Johanna Dillen, Jenny Widell, e Transek Sweden. 2002. "MEASURING INTRUSION VALUATIONS THROUGH STATED PREFERENCE AND HEDONIC PRICES - A COMPARATIVE STUDY." *European Transport Conference 2002*. London: Association for European Transport.
- Emery, James, e Carolyn Crump. 2003. *The WABSA Project: Assessing and Improving Your Community's Walkability & Bikeability*. The University of North Carolina at Chapel Hil.
- Ferreira, Eduardo. 2003. *Violência e insegurança urbana: um fenómeno em crescimento ou em transformação? O caso da Área Metropolitana de Lisboa*. Lisbon: CET - Centro de Estudos Territoriais.
- Fisher , Peter. 2005. *Grading places: What do the buisness climate rankings really tell us?* Washington: Economic Policy Institute.
- Gijswijt-Hofstra, F M. 1965. "Leefbaarheid, een begripsverkenning." *S.L.*
- Gratz, Roberta Brandes. 1995. *The Living City: How America's Cities Are Being Revitalized by Thinking Small in a Big Way*. New York: John Wiley & sons, Inc.
- Groot, J P. 1967. "Poging tot verduidelijking van het begrip leefbaarhied." *stedebouw en valkshuisvesting* 48: 388-391.
- Haj Hasan, Mohammed. 2007. *The importance and the role of urban security in reducing crime in the Palestinian cities*. Master Thesis, Nablus: AL-Najah national university.
- Hankins, Katherine , e Emily Powers. 2009. "The Disappearance of the State from "Livable" Urban Spaces." *Antipode* 41 (5): 845-866.
- Heylen, Kristof. 2006. "Liveability in social housing: Three case-studies in Flanders." *ENHR conference "Housing in an expanding Europe:theory, policy, participation and implementation"* . Ljubljana.
- Hiss, Tony. 2010. *The Experience of Place: A New Way of Looking at and Dealing With our Radically Changing Cities and Countryside*. New York: Knopf Doubleday Publishing Group.
- Hovey, Bradshaw. 2008. "In search of urban livability." *Journal of Urban History* 552-561.

- Hugenberg, Kurt , e Sabine Sczesny. 2006. "On Wonderful Women and Seeing Smiles: Social Categorization Moderates the Happy Face Response Latency Advantage." *Social Cognition* 24 (5): 516-539.
- Hur, Misun, Jack Nasar, e Bumseok Chun. 2010. "Neighborhood satisfaction, physical and perceived naturalness and openness." *Journal of Environmental Psychology* 30(1): 52-59.
- Kaal, Harm. 2011. "A conceptual history of liveability. dutch scientists, politicians, policy makers and citizens and the quest for a livable city." *City* 532-547.
- Kammounah, Haidar. 1997. *The relationship between urbanization and crime*. Bagdad: The Ministry of Culture and Information, House of Cultural Affairs.
- Kashef, Mohamad. 2016. "Urban liveability across disciplinary and professional boundries." *Frontiers of architectural research* 5: 239-253.
- Kearns, Gerard , e Chris Philo. 1993. *Selling places: the city as cultural capital, past and present*. Oxford: Pergamon Pres.
- Kirita, Takahiro, e Mitsuo Endo. 1995. "Happy face advantage in recognizing facial expressions." *Acta Psychologica* 89 (2): 149-163.
- Kunstler, James. 1993. *The Geography of Nowhere*. New York: Simon & Schuster.
- Layard, Richard . 2010. "Measuring Subjective Well-Being." *Science* 327: 534-535.
- Lennard, Henry. 2012. *Principles of True Urbanism*. 19 de April. <http://www.livablecities.org/articles/principles-true-urbanism>.
- Ley, David. 1980. "Liberal Ideology and the Postindustrial City." *Annals of the Association of American Geographers* 70 (2): 238-258.
- Leyden, Kevin. 2003. "Social Capital and the Built Environment: The Importance of Walkable Neighborhoods." *American Journal of Public Health* 93 (9): 1546–1551.
- Li, Chenguang, Lu Sun, e Phillip Jones. 2012. "Liveability of High-rise Housing Estates: A Resident-centered High-Rise Residential Environment Evaluation in Tianjin, China." *48th ISOCARP Congress* . Perm.
- Liska, Allen, e Steven Messner. 1999. *Perspectives on Crime and Deviance*. New York: Pearson Education press.
- Litman , Todd. 2011. *Sustainability and Livability, Summary of Definitions, Goals, Objectives and Performance Indicators*. Victoria: Victoria Transport Policy Institute.
- Litman, Todd. 2003. "Economic Value of Walkability." *Transportation Research Record Journal of the Transportation Research Board* 1828 (1): 3-11.
- . 2008. "Evaluating Accessibility for Transportation Planning." *TRB 87th Annual Meeting: Conference Recordings*. Washington: Transportation Research Board.

- Litman, Todd. 2016. *Evaluating Transportation Land Use Impacts Considering the Impacts, Benefits and Costs of Different Land Use Development Patterns*. Research Report, New York: Victoria Transport Policy Institute.
- Litman, Todd. 2003. "Measuring transportation: Traffic, Mobility, and Accessibility." *The Institute of Transportation Engineers journal (ITE)* 18 (1): 103-108.
- Litman, Todd. 2011. *Sustainability and Livability. Summary of Definitions, Goals, Objectives and Performance Indicators*. New York: Victoria Transport Policy Institute .
- Loureiro de Matos, Fátima. 2012. "Recent dynamics in the Portuguese housing market as compared with the European Union." *Bulletin of geography* 69-84.
- Ltd, Caribbean Blinds UK. 2016. *Caribbean Blinds UK Ltd*. <http://www.cbsolarshading.co.uk/>.
- Ludvigsen, Martin. 2006. *Designing for Social Interaction. Physical, Co-located Social Computing* . PhD Dissertation , Aarhus: Center for Interactive Spaces.
- Lund, Hollie. 2002. "Pedestrian Environments and Sense of Community." *Planning Education and Research* 21: 301-312.
- Lynch , Kevin, e Lloyd Rodwin. 1958. "A Theory of Urban Form." *Journal of the American Institute of Planners* 24 (4): 201-214.
- Maloir, Catherine, Taede Tillema, e Jos Arts. 2011. "LIVABILITY NEAR ROADS: TOWARDS MORE SUSTAINABLE ROAD PLANNING BY TAKING ACCOUNT OF THE RESIDENTIAL CONTEXT." *90th TRB meeting*. Washington.
- McCann, Eugene. 2004. "'Best Places': Interurban Competition, Quality of Life and Popular Media Discourse." *Urban studies* 41: 1909-1929.
- McNulty, Tony . 2003. *Labor Party, of Harrow East for the House of Commons*. British parliament.
- Miklosi, Adam. 2012. *Adam Miklosi offical*. Acedido em 2016. <http://www.adammiklosi.hu/product/>.
- Morai, Saied, e Mahmoud Taha. 2005. "Enviromental architecture for tradational and modern housing under the sustanable architecture." <http://arch-sustainable.blogspot.pt/>.
- Namazi-Rad, Mohammad-Reza, e Pascal Perez. 2016. "A Semi-Empirical Determination of Perceived Liveability." *Bulletin de méthodologie sociologique: BMS* 129: 5-24.
- Newman, Jeremiah. 1959. "The viability of the village in relationto size." *Rural Migration*.
- Oakley, Deirdre , Erin Ruel, e Lesley Reid. 2013. "Atlanta's Last Demolitions and Relocations: The Relationship Between Neighborhood Characteristics and Resident Satisfaction." *Housing Studies* 28 (2): 205-234.
- Oliveira, Vítor. 2016. *Urban Morphology: An Introduction to the Study of the Physical Form of Cities*. Switzerland: Springer International Publishing.

- Papachristou, Ioanna, e Martí Rosas-Casals . 2015. “MAKING THE NEIGHBOURHOOD A BETTER PLACE TO LIVE. A SWB APPROACH IMPLEMENTING FUNDAMENTAL HUMAN NEEDS.” *On the waterfront* 40 (2): 31-50.
- Park, Sungjin. 2008. *Defining, Measuring, and Evaluating Path Walkability, and Testing Its Impacts on Transit Users' Mode Choice and Walking Distance to the Station*. Phd dissertation., University of California Transportation Center, Berkeley.
- Pickett, S.T.A., M.L Cadenasso, J.M. Grove, Christopher Boone, Peter Groffman, Elena Irwin, Sujay Kaushal, e Victoria Marshall. 2011. “Urban ecological systems: Scientific foundations and a decade of progress.” *Journal of Environmental Management* 92 (3): 331–362.
- Pierce, Robert, e Thomas Bell. 1987. “Has Urban Liveability Changed Dramatically? A Comparison of the places rated Alamanacs.” *The professional geographer* 39 (3): 351-357.
- Pinho, Paulo, e Cecília Silva. 2016. *Mobility Patterns and Urban Structure*. New York: Routledge.
- Ramos, Tânia Beisl. 2003. “THE EVOLUTION OF HIGH-RISE COLLECTIVE HOUSING TYPOLOGY IN BRAZIL AND PORTUGAL: THE PERSISTENCE AND TRANSFORMATION OF THE MODERN HOUSING.” *International Conference on Methodologies in Housing Research*. Stockholm.
- Restivo, Joana, Fernando Alves, Paulo Mendonça, e José Ferreira. 2012. “Public housing renovation in Porto: typology versus occupancy density.” *International Journal for Housing Science and Its Applications* 36 (1): 9-16.
- Restivo, Joana, Fernando Alves, Paulo Mendonça, e José Ferreira. 2009. “STANDARD HOUSING: ECONOMIC CONCEPTS AND FUTURE RESEARCH IN PORTUGAL.” *Int. Journal for Housing Science* 33: 237-247.
- Rhodes, Gillian, Linda Jeffery, Tamara Watson, Colin Clifford, e Ken Nakayama. 2003. “Fitting the mind to the World. Face Adaptation and Attractiveness Aftereffects.” *Psychological Science* 14 (6): 558-566.
- Rietveld, Piet. 2000. “Non-motorised modes in transport systems: A multimodal chain perspective for The Netherlands.” *Transportation Research Part D Transport and Environment* 5 (1): 31-36.
- Rode , Philipp, e Graham Floater. 2014. *ACCESSIBILITY IN CITIES: TRANSPORT AND URBAN FORM*. London: Global Commission on the Economy and Climate.
- Ruth, Matthias, e Rachel Franklin. 2014. “Livability for all? Conceptual limits and practical implications.” *Applied Geography* 49: 18-23.
- Santos, Cátia, Tiago Ferreira, Romeu Vicente, e Raimundo Silva. 2013. “Building typologies identification to support risk mitigation at the urban scale. Case study of the old city centre of Seixal, Portugal.” *Journal of Cultural Heritage* 14: 449–463.
- Saraiva, Miguel, e Paulo Pinho. 2011. “A comprehensive and accessible approach to crime prevention in the planning and design of public spaces.” *URBAN DESIGN International* 16 (3): 213–226.

- Schmitz, Adrienne, e Jason Scully. 2006. *Creating Walkable Places: Compact Mixed-use Solutions*. Vol. ISBN: 0874202345. ULI-the Urban Land Institute.
- Schneider, Richard, e Ted Kitchen . 2002. *Planning for Crime Prevention: A Transatlantic Perspective: Trans-Atlantic Perspectives*. London: Routledge.
- Speck, Jeff. 2013. *Walkable City: How Downtown Can Save America, One Step at a Time* . New York: North Point Press.
- Spirn, Anne Whiston. 2014. “Ecological Urbanism: A Framework for the Design of Resilient Cities.” Em *The Ecological Design and Planning Reader*, de Anne Whiston Spirn, 557-571. Island Press/Center for Resource Economics. doi:10.5822/978-1-61091-491-8_50.
- Tavares, Fernando Oliveira, Elisabeth Pereira, e Antonio Carrizo Moreira. 2014. “The Portuguese Residential Real Estate Market. An Evaluation of the Last Decade.” *Panoeconomicus* 739-757.
- Teixeira, Manuel. 1996. *Habitação popular na cidade oitocentista: as ilhas do Porto*. Lisbon: Fundação Calouste Gulbenkian.
- Tonkens, E. 1960. “De leefbaarheid van het platteland.” *Mens en maatshappij* 1-13.
- Transit Cooperative Research program. 1997. *The Role of Transit in Creating Livable Metropolitan Communities*. New York: National research council, National Academy Press.
- Tulumello, Simone. 2014. *Local policies for urban security and spatial planning in the Lisbon metropolitan Area. The cases of Ç Lisbon, Cascais and Barreior municipalities*. Post-Doctorate research report, Lisbon: Institute of Social Sciences.
- Uitermark, Justus. 2009. “An in memorian for the just city of Amesterdam.” *City* 13 (2): 347-361.
- WELLE, BEN, QINGNAN LIU, WEI LI, CLAUDIA ADRIAZOLASTEIL, ROBIN KING, CLAUDIO SARMIENTO, e MARTA OBELHEIRO. 2015. *Cities Safer by Design*. Practical analysis, World Resources Institute .
- White, Nicholas. 2006. *A Brief History of Happiness*. Oxford: Blackwell Publishing.
- Zahia, Shweishy. 2006. *A Study in the social, cultural, and urban characteristics of palaces in the city of Touggourt*. Master dissertation (Arabic), Constantine: Mentouri University.